Chemical Week-





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TO HYDROGEN PEROXIDE USERS:

RE YOUR 1956 HYDROGEN PEROXIDE REQUIREMENTS,
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TRUCKLOADS AS WELL AS LCL; WIRE, WRITE
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SOLVAY PROCESS DIVISION
ALLIED CHEMICAL & DYE CORP
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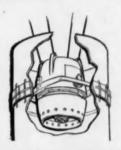


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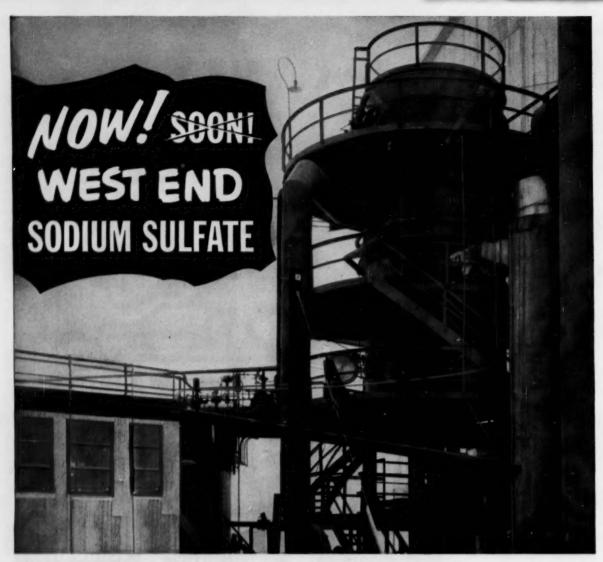
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New Plant now in production taps natural source of sodium sulfate

West End Chemical Company now is producing Salt Cake and Anhydrous Sodium Sulfate at the rate of approximately 50,000 tons annually. These new products maintain the *premium quality* which has

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West End will be pleased to submit samples, prices and freight schedules for your evaluation upon receipt of your inquiry. We request that you include any applicable specifications governing your requirements for these products.

West End Chemical Co.

Executive Offices: Nineteen Fifty-Six Webster Bldg., Oakland 12, California · Plant: Westend, California

December 3, 1955

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Publisher Wallace F. Traendly
Editorial Director Sidney D. Kirkpatrick
Editor W. Alec Jordan
Managing Editor Howard C. E. Johnson

DEPARTMENT EDITORS

Business & Industry Jane H. Cutaia

Markets Anthony J. Piombino

Production Donald P. Burke

Research Ralph R. Schulz

Specialties J. R. Warren

Special Projects Homer Starr

Reports Michael L. Yaffee

Illustration, Format

Copy William Mullinack

Buyers' Guide Alvin J. Babkow

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Business & Industry Vincent L. Marsilia
Distribution John M. Winton
Cooper R. McCarthy
Markets Jorma Hyypia
Production Kenneth Wilsey
Research Joseph F. Kalina
Specialties Charles Joslin

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	Gerald W. Schroder
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Convenient aerosol packaging boosted sales for a popular product...and may do the same for yours

Aerosol-packaged room deodorants maintain a high level of sales around the calendar. Dealers stocking them report that aerosols have the sales edge. Once again housewives have been quick to appreciate the added convenience of the modern aerosol package.

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If you're considering aerosol packaging, the Du Pont laboratories can put a broad background of information at your service. They'll advise you on the correct mixture of product and propellent—help you select the one or more "Freon" propellents best suited to your needs. Du Pont will also put you in touch with contract loaders who have experience and the necessary specialized equipment for filling all types of aerosol packages.

For nearly 25 years Du Pont has been manufacturing "Freon" compounds to laboratory standards which assure continuous high quality and purity. "Freon" propellents are nonflammable, nonexplosive, virtually nontoxic and are the most widely used of all aerosol propellents.

For more information or technical assistance write to E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division, Dept. 1612, 2420-13 Nemours Bldg., Wilmington 98, Delaware.



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filled with background information on aerosols, and specific advice for approaching the aerosol field. We'll also be glad to answer particular technical problems you face in respect to aerosols, and to send any literature we have covering phases of aerosol development, production and marketing that interest you. Write to Du Pont at the address given above.





FREON

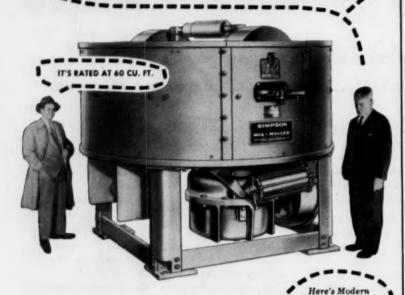
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*"Freon" is Du Pont's registered trade-mark for its fluorinated hydrocarbon propellents



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THIS IS THE 3F SIMPSON MIX-MULLER — with it, you can prepare 40 to 60 cu. ft. of intimately blended materials . . . in minutes. How many minutes depends upon what you're mixing, naturally. But, we have users who once counted materials preparation time in days . . who now talk in minutes, thanks to their Simpson Mix-Muller.

Mixing is our business at National; it has been since 1912. In recent years, increased mixing capacity for today's production requirements has been a big part of that business. That's why the Simpson Mix-Muller utilizes a stationary pan, automatic bottom discharge and is equipped with spring loaded mullers . . . to make the most of every minute of mixing cycle duration.

Available in 13 models in batch capacities of 1/10 to 60 cu. ft., Mix-Mullers are available to meet a variety of processing needs—as a reaction vessel, for heating or cooling while mixing... in stainless or other special materials of construction. Write for details.





SIMPSON MIX-MULLER® DIVISION

NATIONAL ENGINEERING CO. (Not inc.) 642 Machinery Hall Building Chicago 6, Illinois OPINION ..

Millions/Billions

To THE EDITOR: Your CW Report on synthetic detergents (Oct. 22) is very well done, and I appreciate your giving The Atlantic Refining Co. and myself credit for the charts on pp. 40 and 45.

However, I am somewhat astonished to see by the chart on p. 45 that the industry sold over 3,600,000,000 lbs. of alkyl aryl sulfonate. The actual figure I cited before the Association of American Soap and Glycerine Producers, Inc., was 364.2 million lbs. . . . Obviously the entire vertical axis of the chart is in error. . . .

JAS. RALPH MACON Market & Product Development Mgr. The Atlantic Refining Co. Philadelphia

Our error, indeed. The statistics we had assembled on alkyl aryl and other detergents were distorted (by a factor of 10) when the graphmaker muffed a decimal.—ED.

Tank Linings

To the Editor: We are very much concerned over the news article discussing protective linings for tank cars (Oct. 29, p. 46) . . . in which you state that 5 coats of LC-34 Epon, with a total mil thickness of 6-7 mils, furnish the same protection as 20 coats (with a mil thickness of 20 mils) of chloroprene rubber . . .

As a major producer and applicator of both chloroprene rubber (neoprene) and epoxy materials for coating purposes, we take extreme exception to the inference made by that statement.

An average coat of Epon is 1.8 to 2.5 mils in thickness. This you state correctly. However, an average coat of neoprene is about 3 to 5 mils... not 1 mil as you indicate. We have supplied the coating for lining many tank cars handling the 73%-rayongrade caustic you mention; 3 to 5 coats of neoprene were used ...

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

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That's not an unusual order, and ARco does meet such requirements very promptly.

An ARco corrosion-preventing rubber lining or coating can be delivered right to your plant... anywhere in the country... ready to fit your equipment regardless of size. Yes, we do deliver the job packaged, literally speaking.

ARco Field Service Units come to your plant completely staffed, completely equipped to make your chemical processing equipment corrosion-proof . . . with advanced procedures and controlled rubber compounds.

The performance of ARco Field Service Units has proven dependable. This proof is their outstanding record of successes in combating corrosion, substantiated by savings in time and equipment realized by industrial management.

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OPINION

gave excellent service . . . Certainly 20 coats would never be required, nor would such coats have a thickness of just 1 mil . . .

We would appreciate a clarification of your position on the matter . . .

GERALD F. GILBERT, JR.
The Atlas Mineral Products Co.
Merztown, Pa.

Clarification is, indeed, needed. Organosols can be applied in 3 to 5 mil thicknesses per coat; water-base emulsions (Columbia-Southern No. 7 type) have to be applied in thinner coats to prevent sags and runs.

The producer of the coating to which we referred, Lithcote's Alexander Baldwin, says that it takes 17 to 20 coats (Du Pont's neoprene notebook says 12-14) of the latter type to build up 20 mils. The Columbia-Southern Type 7 is also reportedly better able to withstand 73% caustic at the temperature at which it is loaded, than is the organosol type of material. There are substantially differing opinions as to whether epoxy or chloroprene coatings are superior.—ED.

SEE YOU THERE

Chemical Specialties Manufacturers' Assn., annual meeting, Roosevelt Hotel, New York, Dec. 5-7.

American Mining Congress, annual membership meeting, New York, Dec. 6.

Chemical Industries Exposition, Commercial Museum and Convention Hall, Philadelphia, Dec. 5-9.

International Atomic Exposition, Cleveland Public Auditorium, Dec. 10-16

American Pharmaceutical Manufacturers Assn., midyear and Eastern section meetings, Waldorf-Astoria Hotel, New York, Dec. 12-14.

International Atomic Exposition, Cleveland Public Auditorium, Cleveland, Dec. 12-16.

Toilet Goods Assn., Scientific Section, midwinter meeting, Waldorf-Astoria Hotel, Dec. 14.

Society of Cosmetic Chemists, fall meeting, Commodore Hotel, New York, Dec. 15.

Weed Society of America, first annual meeting, New Yorker Hotel, New York, Jan. 4-6.

Industrial Heating Equipment Assn. Inc., annual meeting, LaSalle Hotel, Chicago, Jan. 23-24.

Assn. of American Soap and Glycerine Producers Inc., annual industry convention, Waldorf-Astoria, New York, Jan. 25-27.



designed and built by



world's largest's single unit nitric acid plant

*220 tons of nitric acid a day is the output of this new C & I plant built for Mississippi River Chemical Co., Div. of Mississippi River Fuel Corp. near St. Louis, Missouri. The plant uses 2 Clark steam turbine driven centrifugal compressors with expanders that recover approximately 2/3 of the power required to operate the plant. Operating costs... greatly reduced; capacity... a record!

If you are considering nitric acid or expanding your present facilities it will pay you to consult C & I. For only C & I has actually designed and constructed large plants of this type that are in operation today.

C & I designs and builds Complex Fertilizer Plants, Ammonium Nitrate Solutions and Solids Plants (Stengel Process or Prilling), and Ammonium Nitrate Ammonia Solutions Plants.

C & I's new Ammonium Nitrate Plant designed and built for Mississippi River Chemical Co. near St. Louis. Capacity: 280 tons per day of prilled Ammonium Nitrate and 200 tons per day of Nitrogen Solutions.



THE CHEMICAL AND INDUSTRIAL CORP.

CINCINNATI 26, OHIO

Specialists in Plants for the Processing of Anhydrous Ammonia

Available throughout the World

We are telling 3½ million farmers

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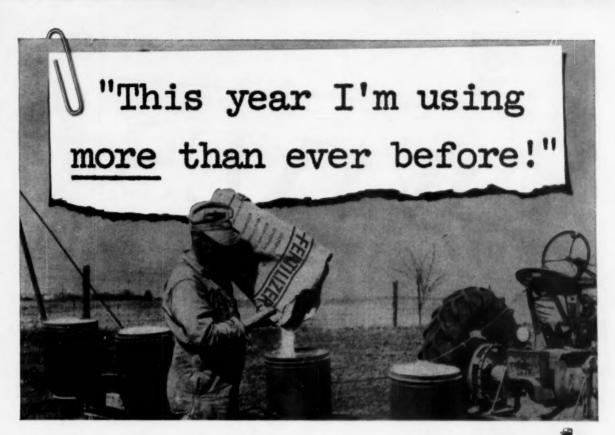
The farmer is in a cost-price squeeze today. He is faced with acreage restrictions, lower prices for crops he sells and higher costs for things he has to buy.

Fertilizers are vital to farm profits, because fertilizers produce big extra yields from smaller acreages, thus assuring a greater return from land, labor, machinery and other fixed expenses.

The importance of fertilizers in the present situation should be brought strongly to the attention of the farmer. Nitrogen Division, Allied Chemical & Dye Corporation, is doing something about it!

The advertisement shown on the opposite page is the opening gun in a powerful and continuing campaign directed to the attention of more than 3½ MILLION readers of farm magazines.

This campaign will serve the best interests of the farmer, the fertilizer manufacturer, the county agent, the country banker, the experiment station, the extension service and all others interested in a profitable agriculture.



THIS YEAR many of the best farmers are using more fertilizer than ever before. With farming costs going up and farm profits coming down, they want the extra yields of high-quality crops that fertilizer adds to every acre at such low extra cost.

Figure it out for yourself. Your investment in land, labor, seed, machinery, insect control and other fixed expenses is the same whether your yields are high or low. When you double or triple your yield through the use of more fertilizer. you have two to three times as much crop income to carry your fixed expenses. Your only extra costs are the cost of the fertilizer and harvesting the extra yield. The extra yields added by fertilizer are the lowest cost and most profitable share of your crop. You are in better shape to make a good profit despite low crop prices, acreage restrictions and other conditions beyond your control.

If you grow corn, for example, do you know how many bushels per acre you have to produce to cover fixed expenses? In one state the break-even point is 40 bushels per acre. In another state it varies from 30 to 70 bushels per acre depending on the value of the land. If your break-even point is 40 bushels and your yield is 35 bushels, you've lost money. But, if you use enough fertilizer to in-

crease your yield to 100 bushels per acre, you make a big profit.

First consideration should be given to the important economic fact that a bushel or a pound of any crop can be produced much more economically when the yield is high than when the yield is low. The yield per acre bears a positive relation to the cost of production and the yield is dependent on the fertility of the soil.

Fertilizer is your best investment. The price of fertilizer has not gone up like the prices of many other things the farmer buys. Fertilizer grows farm profits. Returns from thousands of tests show that \$1 invested in fertilizer produces an average return of \$3.75 in extra yields. On many crops the return is much higher. Put more fertilizer to work for you. It's your best answer to the present farm situation.

The fertilizer industry serves the farmer. Nitrogen Division serves the fertilizer industry as America's leading supplier of nitrogen for use in mixed fertilizers.

See Your County Agent

Ask your County Agent to recommend the analyses and the amounts of fertilizers best suited to produce big yields of the crops you grow on your soil. His advice to you is based on the latest official recommendations from your Exercision Service and Experiment Station

See Your Banker

Bankers are alert to good investments. They know that fertilizer pays a big return in the short period of a growing season. If you need money to buy more fertilizer, most bankers consider the extra yields produced by fertilizer as an excellent risk.

See Your Dealer

Your fertilizer dealer can supply you with a good brand of fertilizer in the amounts and analyses as recommended by your County Agent. Help your dealer to get your fertilizer to you on time by placing your order early and accepting prompt delivery. Use more fertilizer than ever before and have it on hand when you need it. Remember, fertilizer grows farm profits. Use enough to really pay you big!



NITROGEN DIVISION Allied Chemical & Dye Corporation New York 6, N. Y. • Mepewell, Ve. • Ironian, Ohia Omehe 7, Neb. • Indianapolis 20, Ind. • Celumbia 1, S. C. Azlanta 2, Gu. • Kolemazo, Mich. • Columbia, Me.

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of highest purity for all paper coating requirements

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Fully refined paraffin waxes in a wide melting point range (125–180° F). These are highly stable with negligible oil content. They provide coatings with high gloss and excellent resistance to water vapor transmission.

SHELLMAX

A range of refined microcrystalline waxes for laminating and coating. The laminating grade has excellent adhesive qualities, is flexible and tough. The coating grade is relatively hard and possesses high blocking characteristics.

Both Shellwax and Shellmax have been thoroughly proven in industry for a wide variety of applications.

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Business

Newsletter

CHEMICAL WEEK
DECEMBER 3, 1955

Corporate tidings—mostly favorable, and centering around year-end dividends, mergers and stock splits—were the talk of the industry last week. Early estimates now predict that chemical company stock offerings will reach an all-time record high this year—with cash proceeds realized from the sale of common stock at their highest level in two and a half decades.

Three latecomers—adding to the year's total: Weyerhaeuser Timber Co. (Tacoma, Wash.), which will put n four-for-one common stock split-up for stockholder vote later this month; Visking Corp. (Chicago), which is proposing a three-for-one split of outstanding common; and G. D. Searle & Co. (Chicago), which has reclassified its stock on a basis of three shares for one.

Still waiting for the market to settle down: Du Pont, whose directors declared a \$3 year-end dividend on common stock—bringing 1955 distribution to \$7/share. Best bet now: Du Pont will split (either four-for-one or five-for-one) before the end of 1956's first quarter.

And in San Francisco, approval by stockholders of the merger of Crown Zellerbach Corp. and the Gaylord Corp. (St. Louis) brings together two of the largest paper producers in the U. S. Together, the merged companies should have sales of over \$400 million next year.

Overlooked by a large sector of industry, but not by the Justice Dept., is the long-heralded antitrust probe of the nation's synthetic rubber producers. This study was required by law to check whether the companies complied with two pledges—exacted by Congress as a quid pro quo for approving the sale—whereby the 11 firms buying government-owned plants promised (1) to hold the synthetic rubber price line for a full year, and (2) to set aside a portion of production for small business users.

Also involved, however, will be a measure of the extent of competition existing in the rubber-making industry. And this—more than the two pledges—prompts insiders to predict that Antitrust chief Stanley Barnes may drop a small bombshell when the report comes out next April 29.

Discussions are reported to have advanced "past the friendly stage" between Ford Motor Co. and Reynolds Metals Co. concerning construction of a large aluminum plant in the Ohio Valley. Details have yet to be worked out, but it's likely, if the deal goes through, that arrangements will be similar to those made between the two companies seven years ago—when Reynolds' Jones Mills plant was built in Arkansas. (GM, in Arkansas, gets its molten aluminum from Reynolds, reduction plant across the street, eliminates the necessity of casting into ingot and then remelting later for casting into parts at the foundry.)

Possible site for the aluminum plant: Reynolds has rights and options to buy 25,000 acres of coal fields on the Green River in Kentucky, which could be the answer to one major question—source of power.

Applications to the Export-Import Bank in Washington for sizable loans to expand Chile's nitrate industry now appear to have a good chance of consideration, according to Samuel Waugh, president.

Totaling something over \$14 million, the loans "will have more than a good chance of being granted" just as soon as the government of Chile and the nitrate companies agree upon a referendum concerning reduction of governmental control over industry.

Business Newsletter

(Continued)

U.S. contractors have been asked by Indian firms to offer bids on two chemical plants proposed for construction in India.

One—an aspirin-producing plant—is planned to have an initial capacity of 300 tons/year; the other—a mica-grinding plant—should be able to grind 5 tons/day.

And a few brand-new expansion plans move into the spotlight as companies strive to get into the production race before the boom slackens:

- Potash Co. of America plans to build an exploratory tunnel in search for phosphate deposits in Bear Lake County, Idaho. But whether the company will plan beneficiation or custom sale of its rock must await a costof-mining survey.
- Agricultural Chemicals, Ltd., will build a fertilizer plant at Hyde Park (London), Ont., expected in operation by midsummer, 1956.
- Preliminary construction of Gas Ice Corp.'s Consul, Sask., dry ice plant has started. First plant in Canada to produce dry ice from natural carbon dioxide gas, it should be in operation late next year.

A switch in plans whereby Pemex (the Mexican government-controlled oil monopoly) will enter the petrochemical production race in 1956 appears likely this week.

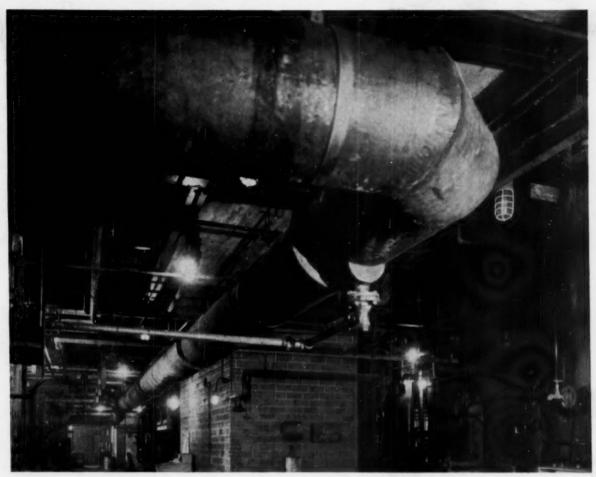
Pemex officials are now negotiating with Phillips Petroleum Co. (Bartlesville, Okla.) for a license to produce polyethylene by the Phillips low-pressure process (for other news of which, see p. 69). If the deal is consummated, tenders to several other U.S. companies to produce petrochemicals in Mexico will be called off. Pemex will be in the market for licensing other petrochemical processes, too.

Originally, Pemex had planned only to supply raw materials to "invited" U.S. petrochemical producers; now it's apparent that its appetite has been whetted by the possibility of getting into "high-prefit production brackets" itself.

Passage of a bill by the Indian Parliament late last month gives the Indian government unparalleled powers over private business, and it has a number of U.S. chemical executives privately worried.

Under provisions of the bill, import agents that have acquired monopolies over certain class goods (including chemicals) will be closely scrutinized over the next five years, after which their position will be reappraised by a government committee. If there is evidence of a "concentration of power or wealth in the hands of a few," the government will be empowered to limit interlocking directorates and profits.

Confidence of the U.S. government in the artificial fluoridation of water will be quietly vouched this spring when the Great Lakes Naval Training Center (Great Lakes, Ill.) puts its new purification plant into operation. Backing the move: both the Navy's Surgeon General and the Chief of Naval Personnel.



THIS COST-CUTTING DUCTWORK is made by duVerre, Buffale, N. Y. We supply only the HETRON resins that go into its manufacture.

Fire-safe polyester ductwork

takes big bite out of corrosion costs

Ductwork like this, made from HETRON® polyester, safely handles acid fumes that can eat through metal ducts in a few weeks.

This ductwork has great structural strength and impact strength. It's so light that one man can pick up an 18-foot-long, one-foot-diameter section and walk away with it. Yet in the long run it costs less than anything else available for handling corrosive fumes and smoke!

And this ductwork is fire resistant—so it is being installed in many plants where polyester could not have been used before.

Custom-built system

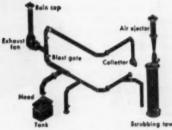
You can get a whole ventilating system—complete with fume hoods, blowers, scrubbing towers, air ejectors, fittings—made out of this fire-safe polyester.

It withstands most acids and many common organic materials and gases, wet or dry, over a wide range of temperatures, with little or no appreciable attack.

It's assembled quickly on the spot, from large sections custom-molded to fit your requirements. This eliminates many of the flanged and coupled parts needed in conventional ductwork, and cuts installation labor cost. Joints can be cold welded permanently with resin, or flanged and bolted to permit access to ducts.

Won't support flame

This ductwork is a new example of the many uses HETRON fire-resistant resins are finding in industry. This new material of construction is inherently self-extinguishing. Parts made with HETRON will burn slightly under a blowtorch flame, but snuff out as soon as the flame source is removed. The resins combine permanent flame resistance with outstanding flexural strength, tensile strength, resistance to heat and weathering, very low water absorption.



We shall be glad to supply you with the names of reputable fabricators producing this type of equipment.

For complete data file on HETRON resins, write us.

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7 7 m

5 8 , 50

FIG. 2453 DG (Sectional)— 150-Pound Stainless Steel O. S. & Y. Gate Valve.



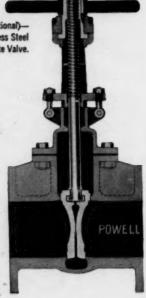


Fig. 1559—150-Pound Steel Lubricated Plug Valve.

POWELL VALVES...THE COMPLETE QUALITY LINE...POWELL VALVES.



Powell Walves

FIG. 2342—Stainless Steel Bolted Cap Swing Check Valve For 150 Pounds W.P.



You can depend on outstanding performance from every valve made by The Wm. Powell Company, for Powell Valves have a proven record of long life and dependable service.

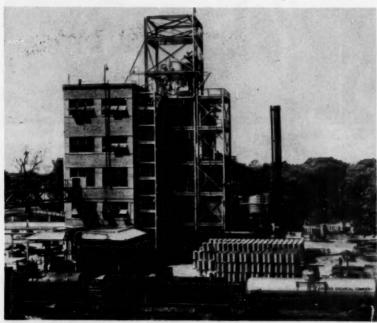
And Powell Valves give you better value!
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quality features—features that can save you money and give you lasting flow control.

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The Wm. Powell Company, Cincinnati 22, Ohio 109th year

BUSINESS & INDUSTRY



VERTICAL DIVERSIFICATION: Dip into chemical production by major papermaking companies* is . . .

Rapidly on the Increase

Two predictions are universally accepted—as regarding the future of the pulp and paper manufacturing industry this week. The trend toward expansion into chemical production is increasing rapidly; and there may be a rash of pulp and paper mergers during 1956.

Major drive behind both urges is identical. Expansion into chemicals (or merger with a firm turning out chemicals as its major product) is regarded by management of most paper companies as the surest insurance against a dip in paper sales, And equally important: diversification into chemical gives paper- and pulpmaking concerns a chance to lessen the problem of stream pollution—long a cardinal point of friction between management and governmental water pollution officials.

Growing Fast: The extent to which major paper companies have moved over into chemical production is still not a material factor in U.S. chemical sales—but the total is growing.

• West Virginia Pulp and Paper Co., for example, now credits 5% of its annual sales to chemicals—a \$7-million/year business.

• International Paper Co.—which recently completed a \$2-million expansion program at its Arizona Chemical Co. (Panama City) plant (see cut above), jointly owned with American Cyanamid Co.—now produces a host of chemicals, including tall oil, tall oil fatty acids, and rosins.

Union Bag & Paper Co. is building, and expects to have completed soon, a \$2-million tall oil plant—to utilize the by-products of its kraft paper operations.

Stake Is Large: The potential saving in annual cost of chemicals to papermaking companies—in itself might be a considerable factor in encouraging

* As exemplified by Arizona Chemical Co.'s recently completed Panama City, Fla., tall oil, fatty acid, and rosin plant.

diversification. At last count, over \$250 million was being spent by paper companies for chemicals each year; it has been roughly calculated that something over 500 lbs. of chemicals are used to turn out a ton of every kind of paper other than newsprint.

But paper companies' executives officially view their entrance into chemicals as something more.

"It's the only safe way paper companies can counter chemical producers on their own ground," admitted one executive to CW last week, "The inroad of the plastic producers—into a domain formerly ruled by papermakers—is the real reason behind today's expansion—and tomorrow's mergers of paper companies."

Two Ways to Help

On the crest of the rising wave of concern about this country's present and future supplies of engineers and scientists, two more suggestions on what industry should be doing have come into view this week.

One comes from the Scientific Manpower Commission, which recently
received a special committee's report
on the problem of over-age scientists.
It finds that "a substantial number of
older scientists who find themselves
retired or unemployed are seeking reemployment, and generally encounter
difficulties finding it." SMC holds that
those scientists' professional societies
should help find jobs for qualified
older members, and also hints that
industrial management should review
hiring and retirement policies that—
in some cases—are "anachronistic."

Another proposal for industry comes from the National Manpower Council, Besides advocating a number of changes in high school programs throughout the country, NMC asks industry to put more stress on specific in-company training. Small as well as large firms, the council says, should expand and improve their training efforts and explore new ways of building effective training programs. One vital perquisite, according to NMC improved supervision.





LOOMING MANPOWER SHORTAGE: Stirs chemical management* to join forces in . . .

Shouldering Educational Responsibility

In a pre-Thanksgiving spirit of conviviality and general good cheer, 776 members of the Manufacturing Chemists' Assn. gathered in New York's Hotel Statler last week.

But their chief discussions struck a somber note.

The manpower situation, most industry representatives agree, is one that is not only bad—but one that is rapidly becoming worse. It now well behooves chemical companies everywhere to take stock of the situation, and determine what they, individually, can do to alleviate the impending crisis.

"Industry can, and has," said Eastman Kodak's Phillip Woltz, "indicated in many ways its willingness to cooperate. But the problem will not be solved by pointing a finger at the inadequacies that now exist."

"Rather," he maintains, "it will take the all-out earnest effort of chemical men at all levels. Unless this is done, both industry and educational institutions may well find themselves in a much worse predicament than the one that now faces them."

Top-to-Bottom Job: Utilizing and maintaining the flow of scientifically trained men is a job that will mean not only training tomorrow's chemists but also planning a development program for those men already in training, maintains Celanese's George Bricker.

"Advanced management programs for executives do pay off," he says. "The very fact that these programs (sponsored by leading universities) have increased over the past 10 years is a solid indication that companies feel that something is gained by participation in them."

Celanese has entered its executives in eight different programs in advanced management in the past four years, he goes on. He acknowledges that many of the benefits are intangible or may take considerable time to make themselves evident. But he is sure that the effort will pay off in the end.

A lot depends, all panelists speaking on management structure and the executive shortage agree, on the individual who attends the program.

Some chemical trainees, representing a number of different firms, have shown a great improvement in management skill as a result of training; others have demonstrated a definite but less-marked improvement.

The dependence on the individual participant of the actual value secured

*Above, left to right (both pictures):
Francis J. Curtis, Monsanto; George W. Bricker,
Jr., Celanese; R. K. Mueller, Monsanto; Walter
R. Mahler, Mahler Asso-iates; Glen Perry,
Du Pont; Phillip C. Woltz, Eastmin Kodak;
Arthur V. Wilker, Union Carbide; Arthur Smith,
Jr., Dow; William C. Foster, Olin Mathieson.

† Below, left to right (both pictures): John A. Field, Carbide & Carbon; Hugo Riemer, Allied Chemical & Dye; Paul B. Slawter, Jr., G. M. Basiord Co.; Harry Jordan, American Water Works Asan. Walker Penfield, Pennsalt; H. H. Schrenk, Industrial Hygiene Foundation of America; H. I. Jacobs, Du Pont; W. I. Burt, Goodrich-Gulf Chemicals.





OTHER PANELS†: Considered marketing problems, the thorny pollution situation.

from a program, the importance of selecting the proper men for off-thejob development, and the selection of the right program of study are all important factors to be considered by any company seeking to get the most from its current supply of scientific manpower.

Need for Enthusiasm: As for improving the training facilities for tomorrow's management, Du Pont's Glen Perry is frank in admitting that chemical companies will have to "exploit all the possibilities."

"There must be general public enthusiasm aroused," he states, "for all the steps necessary to procure competent teachers."

The public (encouraged by chemical firms) must be conditioned—by a selling program—to the fact that these good science teachers are a vital necessity to the future of the United States. It is their duty ("perhaps the single most important duty of top management today") to instill into the public a sense of urgency as to the impending danger of the science-teacher shortage.

Top management's role—both as coach and inspirer—cannot be delegated if the U.S. chemical industry is to retain its current position of prominence in worldwide industry.

MCA's Part: As its part in attempting to rectify the scientific manpower dearth, MCA intends to embark on a program designed to assist science teachers and students—at a junior high school level.

Formulation of the program (according to MCA President John E. Hull) is now being completed, and pilot testing in a few school systems will start early in 1956.

Once the program has been perfected,* it will be made available to MCA member companies for execution in their own plant communities.

Other Problems Natter: Other problems (such as the oft-discussed pollution problem, and marketing methods —see p. 46) also drew interested crowds of executives.

But at the end of a long and factcrammed day, one observation was clear. Chemical management is today well aware of its responsibility in the manpower crisis, has pledged itself to meet the problem head-on.



NO HARD FEELINGS: Despite one brief clash, company men* agree on . . .

'Fair Play' Codes for Plastics Concerns

A voluntary move on the part of the companies themselves to set up codes of ethical business practice standards in the manufacture and distribution of plastics housewares in general and melamine dinnerware in particular appears this week to be on the verge of succeeding.

Often enough, the Federal Trade Commission orders hearings on trade practice rules when it finds questionable goings-on in various industries. But last week's hearings before FTC attorney Barnett Watson and Commissioners Robert Secrest and Sigurd Anderson in Washington were requested by the Society for the Plastics Industry, representing numerous companies that make and sell plastic products for the home.

While FTC will take no formal stand on the proposed rules until it accepts, amends or rejects them sometime in the next two or three months, the hearings were held in friendly fashion and the standards are expected to go through without too much trouble.

Aimed at Fly-by-Nights: The suggested rules hit at a host of unfair practices—misleading advertising, piracy of tradenames and designs, products that fall below the industry's quality standards, false guarantees, and off-list and cut-rate pricing.

These proposed rules are aimed at so-called "fly-by-nights" in these relatively new fields—companies that have

jumped into the market with cheap imitations in an effort to cash in on the industry's expanding sales volume.

Actually, trade practice rules are little more than an industry guide on what not to do in order to stay within the law.

Clash on Brandname: There was just one difference of opinion in the hearings, and it seemed likely that the principal might be able to work out an agreement before the second round of hearings. W. L. Cone—whose Dallas firm turns out Texasware melamine dinnerware—asked that the code include a ban on advertising of brandname dinnerware "when such brandname product is, in fact, not manufactured and not available on the market."

He said he had in mind American Cyanamid's national advertising of its Melmac brand. Cyanamid's Nolan Sommer and E. K. Hunt explained that their company now uses the Melmac name only in connection with finished dinnerware sets, because it had proved impossible to maintain quality control standards when the name was used for the raw melamine powder. The new plan, they contended, works to the advantage of both molder and consumer.

A rough blueprint has now been established for the next five years, involves the use and testing of teachers' source books, vocational guidance, student experiment books, etc.

^{*} Left to right, Cyanamid's Nolan Sommer; Plastics Mfg. Co.'s W. L. Cone; Cyanamid's E. K. Hunt; and Lloyd Moore, chairman of SPI's melamine dinnerware committee and an official of Keystone Brass Works' Applied Plastics Division.



BERGER: Completely 'at sea' over what has sparked a . . .

Question into Interest

Another chemical executive, who left business to perform government service, was catapulted into public print last week as a possible "conflict-of-interests" case.

On the spot: Walter Berger (formerly of Shea Chemical Co., Jeffersonville, Ind.), now deputy administrator of the Commodity Stabilization Service, Dept. of Agriculture; making the charge: columnist Drew Pearson.

Berger says, however, that no Congressional committee has (1) approached him on the subject, or (2) evinced an interest in any desire to discuss it. Moreover, Democratic investigators (normally eager to seize upon every possible conflict-of-interests case) are equally uninterested in Berger's former activities.

Pearson claims that a number of questionable circumstances surround the case, though—all of which Berger (to CW last week) basically denied.

Here, in brief, is how the charges and refutations go:

 Pearson maintains there was "an agreement that it (Shea) would get first option on Berger's services when he left the government."

Berger says, "There was nothing in writing; there was a gentleman's agreement. Vincent Shea (company president) simply agreed to keep the job open six months, time for him to see if he wanted to stay in Washington.

"Frankly, I doubt if I will ever

go back to Shea Chemical. I do want to get back in business, and I'm planning to, about next October. But there isn't any assurance that I'll go back to Shea; the longer I stay away, the less value I'll be to them."

• Pearson, moreover, alleges that Berger has retained his Shea stock and its retention "is contrary to the policy laid down by congressmen for other government officials . . . if their firms do business with the government . . . and that Shea has done business with the Agriculture Dept ."

Berger says, "I still have my Shea stock. It has been split, 2½ for 1, and I figure I've got about 1,500 shares now. But, of the total, that's a drop in the bucket—and besides, the stock involved nonvoting common."

Further: "The fact I kept it has not been concealed. My personal attorney checked on the situation to see whether it would put me in 'conflict.' Besides that, we took the facts to the Solicitor's Dept. (in the Agriculture Dept.) and explained them in detail."

 Pearson's column further charges that Berger "admitted that his company had sold limestone from a limestone quarry at Adams, Mass., to the Agriculture Dept., though he said it was distributed through farmers for use on their land and he was in no way involved."

Berger says, however, that Shea's quarry at Adams has been shut down for almost two years—"since before I came to Washington"—and Shea is now buying limestone for its own use from a former competitor there. Before the quarry closed, Berger says, it did sell limestone through local county agriculture committees to farmers for use in "liming" their land.

Berger's opinion (sure to be seconded by chemical men everywhere) is that the episode is "useful, but only to illustrate what can happen to business people—most of whom take a financial beating to come into government—and, more than that, to companies that get dragged into unpleasant situations merely because they are willing to let their people go."



Wille World

In New Labor Posts: 2 'Moderates'

IT LOOKS as if a "middle-ofthe-road" National Labor Relations Board will be on the job next year as AFL-CIO starts its organizing drive at chemical plants. President Eisenhower is picking two "moderates"—board member Boyd Leedom (left) and trial examiner Stephen Bean—to be new chairman and member, respectively, of the fiveman board. No opposition is expected on Senate confirmation.

Washington Angles »

» Tighter rules on WOC's—businessmen who serve the administration without compensation—are something President Eisenhower is now most concerned about (see p. 20). It means that executives who serve in Washington henceforth will probably have to make a complete break with their business connections before taking a government job. Democratic success in forcing resignations of GOP office-holders for conflict-of-interest reasons really hurts politically. The rules will have a permanent effect—regardless of which party wins the White House next year.

» Additional natural gas for Pacific Northwest industry is now assured. The Federal Power Commission is okaying import of 250 billion cu. ft./day from Canada. Pacific Northwest Pipeline Corp., which is constructing a pipeline from San Juan field in New Mexico for a new outlet in the Northwest, will buy the supplemental Canadian fuel

from Canada's Westcoast Transmission Co.

» New advisory committees (on 14 minerals) appointed to the Office of Minerals Mobilization will constitute a forum for industry gripes about government policies. Mineral producers are fretting over threats of declining government support via future stockpile purchases.

» Sales outlook for nematocidal fumigants makers may be even better next year than predicted. Agriculture Dept. experts are currently alarmed about a new-lound variety of cyst nematode that attacks soybeans. So far, the only known outbreak is in North Carolina, but plant pathologists fear the cysts may turn up elsewhere.

» Companies interested in expanding alkylate producing facilities have already oversubscribed the government's recently increased expansion goal. But the Interior Dept.'s Oil & Gas Division still hopes more companies will apply for tax aid—particularly in regard to construction of facilities in geographically dispersed locations, outside so-called "target areas."

EXPANSION.

Formaldehyde: Borden Co. will build a formaldehyde plant in Seattle, Wash., designed to produce 36 million lbs./year of formaldehyde.

Completion is scheduled for late 1956; when in operation, the plant will double Borden's West Coast production of formaldehyde.

Bromine: Michigan Chemical Corp. (St. Louis, Mich.) will join with Murphy Corp. (El Dorado, Ark.) to build a bromine plant near El Dorado, Ark. Brine from the Smackover oil field will be used as the raw material feed; construction starts in February; completion is scheduled for early fall, 1956.

Also under consideration (for production sometime later); calcium chloride, magnesium oxide, and salt.

Lithium: Lithium Corp. of America will start work immediately to expand its Lithium Division to facilitate expansion of lithium and lithium oxide production. Site of the expansion: St. Louis Park, Minn.

Polyvinyl Acetate Emulsion: Du Pont will expand its polyvinyl acetate emulsion producing facilities at Ni-

agara Falls, N.Y., at a cost of \$550,-000. Work is expected to be completed during the latter half of 1956.

Manganese: Strategic-Udy Metallurgical and Processing, Ltd., will build a million-dollar manganese ore processing plant at Niagara Falls, Ont. No estimated date of completion has been released; Strategic-Udy is a subsidiary of Strategic Materials, Ltd., of Montreal.

COMPANIES.

Public offering of 1.2 million shares (\$60 million) of Aluminum Co. of Canada's 4½%, \$50 par, second preferred stock has been oversubscribed, and the books closed.

The offering—the largest preferred stock offering ever made in Canada—was made by a syndicate headed by A. E. Ames & Co., Ltd.

Of the proceeds, Alcan will use \$30 million to retire its 5¼% second preferred stock, retaining the balance (another \$30 million) for general corporate purposes.

Monsanto Chemical Co, will sell \$15 million of second series 3¾ % income debentures to provide cash to retire its \$3.85 dividend preferred stock.

The 150,000 shares involved (worth \$15 million) will be redeemed at \$104/share plus accrued dividends for all common stock of record through Dec. 16.

Stockholders of Marquette Cement Mfg. Co. have approved a 2½-for-l split of the company's common and preferred stock.

Marquette management intends to offer 250,000 shares of the new common for public sale to finance its current \$18-million expansion program.

Brazos Oil and Gas Co. (a wholly owned subsidiary of Dow Chemical Co.) has been absorbed by the parent company.

This merger, the company's officials point out, was one of the first to be consummated under the recently revised Texas corporation code.

Directors of Lehigh Portland Cement Co. have recommended a 2-for-1 split of the company's common stock, and have asked stockholders' permission to increase the corporate debt limit to \$25 million—from the current 10-million level. The split—if authorized—would take effect in the second quarter of 1956.

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JACKSON: Jersey Standard's first petrochemical coordinator, puts . . .

Spur to Overseas Expansion

Five years from now, by 1960, petrochemical production in Europe may have boomed some 150% past its 1953 level. Over the same period, U.S. output of chemicals from petroleum will have swelled only 100%.

That's why Standard Oil Co. (New Jersey) is putting emphasis now on expanding the petrochemical facilities of its overseas affiliates, and has created a new corporate post—that of chemical products coordinator.

Robert Jackson, first man dubbed with the title, steps up from assistant manager of Esso Standard's Chemical Products Division to fill the job of coordinator. Organizationally, he'll be responsible to one of the company's top coordinators (there are four of them altogether), who in turn reports to Jersey's executive committee and board of directors.

In naming him to stimulate petrochemical affiliate growth, Jersey Standard is angling to insure maximum profits to its entire holding-company aggregate. And obviously, in a corporation of Jersey's size (1954 assets: \$2.63 billion), piloting farflung holdings along the swiftest route to petrochemical profits is a colossal task.

Future Plans: Commenting on the degree to which foreign markets shape up in his plans, Jackson says, "We regard every manufacturing site abroad in the same way we look upon U.S. or Canadian operations.* They are all centers for producing and marketing more and more petrochemicals."

Outside the U.S., farthest advance in petrochemical development is in Europe, he claims. In Latin America and the Far East, progress is not yet as great. But actually, it's the opportunities in these relatively undeveloped areas that Jersey Standard views as the most lucrative markets in the future.

The economic picture abroad certainly seems to support Jackson's thinking. Reasons: foreign industry (especially in Europe) is picking up at ever-increasing rates; U.S. chemical firms (constantly seeking new outlets) are today flocking overseas with heavy investments.

This activity points to the need for low-cost, abundant chemical raw material supplies close to consuming markets. "Petrochemicals are often a ready answer," Jackson says.

What's more, as economic activity abroad spurts upward, not only will petrochemical demand increase, but so will the need for gas and oil products—backbone of Jersey Standard's operations.

Highly Decentralized: Because Jersey Standard is set up in a highly de-

*There are some 45 in the U.S. and over-seas combined.

centralized fashion (each operating company runs itself completely), Jackson, as chemical coordinator, will act mainly in an advisory capacity.

As he says, "We don't intend to dictate action for our affiliate companies. Rather, we'll keep them aware of petrochemical opportunities in their areas, then help in every way possible to get them into production when they're ready for it."

To accomplish this task, Jackson and his deputy, John Wright, expect to spend a good 50% of their working time overseas, most of it sitting down with affiliate management men to discuss petrochemical problems and opportunities. In such sessions (and afterwards), they'll expedite flow of research and engineering information from petrochemically well-advanced Jersey companies in the U.S.

Frequently, to accomplish his end, Jackson may recommend that the parent company send out qualified engineering personnel from the company's research and engineering headquarters in Linden, N.J. Their job will be to work out actual petrochemical problems at an affiliate company, then return to headquarters for further assignment "to other trouble spots."

But in this regard, Jackson quickly adds, "We won't supply personnel to run a petrochemical operation once it gets going. Our foreign companies have well-qualified people for that." Jersey Standard, whenever possible,

'Some chemicals have no economic sources other than petroleum.'



CB&I BUILT ALUMINUM TANKS

Photo No. 1 shows the start of six aluminum tanks, 17 ft. in diam, by 17 ft. 9 in. high. built by Chicago Bridge & Iron Company for the Carbide and Carbon Chemical Corporation at Institute, West Virginia. Photo No. 4 shows the completed tanks, ready for service.

CB&I, a leader in the field of specialized welded plate structures, has four plants with complete facilities for designing, fabricating and erecting steel and other metal plate structures to the most exacting requirements. Write our nearest office for further information.

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will continue to maintain a hands-off attitude in all dealings with its associate companies.

Another important part of Jackson's job will be to maintain liaison with chemical companies here in the U.S. Purpose: if Jersey Standard knows what future expansion projects are and where-the company can anticipate U.S. firms' need for petroleum raw materials.

Here again Jackson will have access to first-hand knowledge-from Enjay Co., Inc., Jersey Standard's 100%owned chemical marketing affiliate.

'We regard the chemical industry as a brand-new customer.'



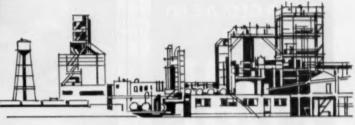
Effect on U.S. Firms: To U.S. chemical firms interested in investment possibilities overseas, Jersey Standard's accent on petrochemical development should, for the most part, come as a boon, not a bane, to chemical companies. Reason: if raw materials are available even in remote world areas, chemical companies will have far greater freedom in choice of plant sites.

What's more, relieved of raw material production problems, they'll be freer to concentrate on other, more profitable, operations.

But, the basic gain in the move to coordinate petrochemical expansion activities will undoubtedly accrue to Jersey Standard. In wrapping together its petrochemical plans on a worldwide basis, the company hopes to carve out for itself an increasingly important niche in world oil and petrochemical development.



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— are your future prospects excellent, average or poor?... Take this three-minute quiz to compare your present position with a future at Chemstrand.

Your Present Job

What are the indications for expansion of the industry in which you are presently employed?

It is estimated that the chemical-textile fibers industry will expand 1100% within the next twenty years. Source: U.S. President's Materials Policy Commission report dated June, 1952.

Does your present job

provide a real climate for personal satisfaction?

You will have ample opportunity in Chemstrand's modern up-to-date plants and laboratories to exercise your imagination, initiative and ingenuity and to make a real contribution toward the progress of the company and the industry.

How are your living conditions?

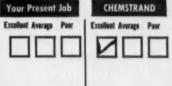
The "New South" offers ideal climate, excellent recreational facilities, exceptional schools. Chemstrand plants are located in Decatur, Alabama, and Pensacola, Florida.

Do you enjoy a complete employee benefit program?

Life insurance for employee and medical, surgical and hospital protection plans for both employee and dependents, and a modern pension plan—all at a low cost to the employee—plus paid vacations and holidays are provided at Chemstrand.

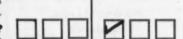
Are your abilities being given full recognition?

Individual assignments are made at Chemstrand with a view toward development of executive capabilities. You are not placed in a "pool" of engineers at Chemstrand.





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Second In Series Bows In

IN ITS SECOND documentary film in 30 months, Monsanto Chemical Co. (St. Louis) unveils "The World that Nature Forgot."

Starring a molecular ballet (composed of fluorescent painted light bulbs, seen being arranged, *above*), and costarring plastics, the film will be offered without charge to service clubs throughout the nation.

Most compelling reason for its conception, say Monsanto spokesmen, was a desire on the part of management to portray for the American public "an industry . . . about to become a giant."

But the picture, as it developed, became noteworthy in its own right. Stop-motion photography, black light, and special equipment (see below) were used to achieve the effect of the motion of molecules (ethylene, benzene and chlorine, combining to eventually yield styrene and vinyl plastics). Time consumed in production: two years.





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Chemical Plants Division Tulsa 1, Oklahoma Pittsburgh 22, Pa. / Chicago 1, Ill.



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BUSINESS & INDUSTRY. .



HOUSEWARMING: Attracted 5,000 guests at new Australian oil refinery.

FOREIGN. .

Petrochemicals / Australia: What could signal the start of a major industry in Australia—oil and petrochemicals—got a warm send-off early this month. Scene was the British Petroleum 60,000-bbls./day refinery at Kwinana, Western Australia; guests included Lord Strathalmond, chairman of the board of British Petroleum (center), and A. R. Hawke, premier of Western Australia (right).

Australia, long known for its wool and wheat exports, has a keen eye on the possibility of a dynamic and dollar-making petrochemicals industry.

Detergents/Great Britain: The growing prominence of synthetics in Britain's detergents market will get a big boost early next January when Shell Chemical's £1.25-million plant at Shell Haven, Essex, comes onstream. Petroleum-base feed stocks for the plant (which will have a capacity of 20,000 tons of alkylbenzene yearly) will come from Shell's United Kingdom refineries.

Paper/Colombia: W. R. Grace & Co. will build a new paper mill in Cali, Colombia. Cost of the installations: 28 million pesos; basic raw material: bagasse. No estimated date of completion has as yet been reported.

Phosphate Exports/Jordan: Before the end of 1955, Jordan will have exported 180,000 tons of phosphates to

Yugoslavia. Also on the list of top consumers of Jordan-produced phosphates: Japan, which has this year purchased 60,000 tons; Czechoslovakia, some 40,000 tons; and Italy, over 330,000 tons.

Soda/Russia: Russia has increased its production of sodium carbonate (and related products) to 83,000 metric tons, according to the Communist newspaper *Pravda*. Production of soda in Russia in 1938 (prior to World War II) was reported at 28,900 metric tons.

Petrochemicals / Peru: Fertilizantes Sinteticos S.A. will build a petrochemical plant in Peru with the financial and technical aid of Montecatini (Italy).

Capitalization of the new firm is \$3.75 million—underwritten, in part, by the Commercial Bank of Milan.

Chile-Indian Accord: The Indian government has authorized import of 8,500 tons of Chilean nitrate into India. The deal was closed last week in New Delhi, after prolonged negotiations.

Urea/Japan: The Japanese Natural Gas Co. will start producing urea from natural gas sometime in 1957 under a patent agreement with the Chemical Construction Co. (American Cyanamid Co. subsidiary, New York).

Japanese Natural Gas, due to be capitalized at \$750,000, estimates initial output at 2,400 tons/month of trea.

New Capitalization/France: One of France's largest rubber-producing firms— Pneumatiques et Caoutchoucs, in which B. F. Goodrich Co. has interests—has floated a 1-billion francloan by selling 10,000-franc 6% debentures. Good bet: a large amount of the proceeds will be used for a major expansion project due to start sometime early next year.

Alcohol/Brazil: After prolonged negotiations, the German firm Braunschweigische Maschinenbau - Anstalt (BMA) has received an order from the Brazilian Sugar- and Alcohol Institute to build an alcohol distillery in Brazil.

Cost is estimated at \$650,000; completion is scheduled for late 1956.

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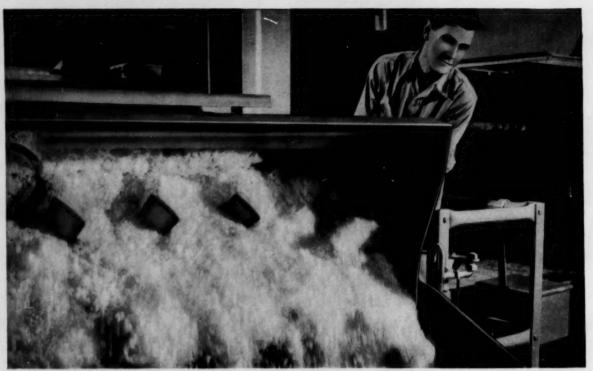


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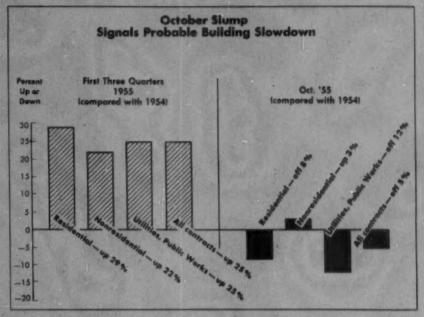
IN SURFACE COATINGS (Paint, Varnish and Lacquer)



IN PETROLEUM (Lubricants and Gasoline Additives)

Charting Business

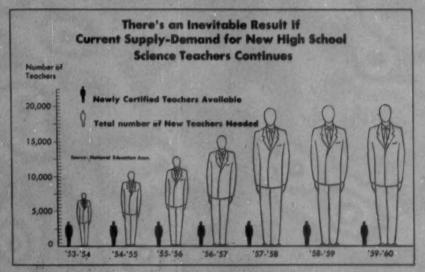
CHEMICAL WEEK
DECEMBER 3, 1955



PACE of new building contracts is slumping sharply, indicating a probable slowdown next year in the nation's building boom. Total new contracts (tabulated late last month by F. W. Dodge Corp.) show the first month-to-month drop in more than a year and a half. What's more: the downward trend hasn't

been in effect long enough yet to have fanned out into all areas, is sure to be felt more strongly in November and December.

Official Washington is, however, still trumpeting high optimism, foresees \$44 billion being spent on all types of construction next year.

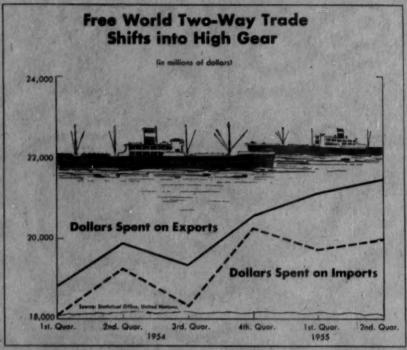


OBERING statistics that will bear on the scientific manpower situation of the future are forthcoming this week from the National Education Assn. Unless there is a decided switch in present conditions, the association claims, the

anticipated available annual supply of newly certified high school science teachers will continue to fall increasingly short of new demand—until, by 1960, the need is more than six times available personnel.

Charting Business

(Continued)



I N LINE with the major precepts of the General Agreement on Tariffs and Trade, free world trade continues to mount.

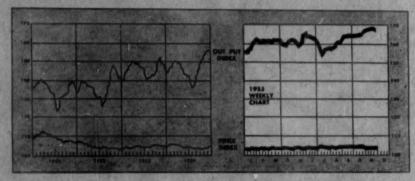
to mount.

Chemicals still do not constitute as great a percentage of the whole as might

be desired—but their total is growing.

Accounting for much of the increase: Germany (which is taking an ever-growing interest in overseas markets) and the U.S. (which is on the move—looking for profitable markets overseas).

BUSINESS INDICATORS



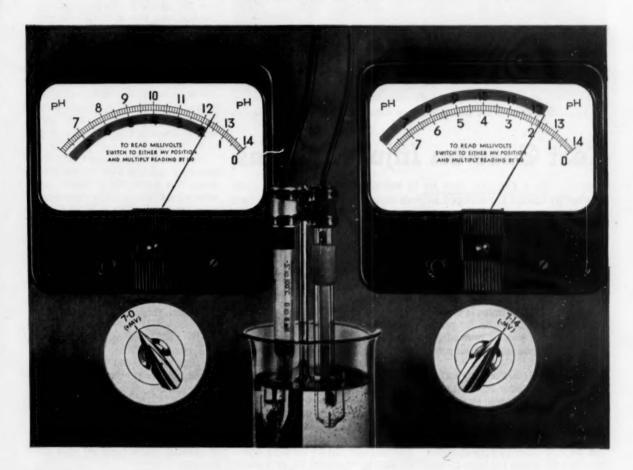
WIIKLY	Latest	Preceding	Year
	Week	Week	Age
Chemical Week Output Index (1947-49=100) Chemical Week Wholesale Price Index (1947=100) Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	170.0	168.3	155.9
	104.7	104.7	104.2
	477.3	494.8	344.9
MONTHLY	Latest	Proceding	Year
	Month	Month	Age
All Manufacturing and Mining Industrial Chemicals All Chemical Products	194	144 188 169	132 160 155

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ALUMINUM PLANT IN OREGON: Now defumed, it's standing trial in . . .

Test Case on Injury Claims

How far can they go in collecting from process companies on claims for alleged human injury from industrial waste gases?

At least part of the answer may be supplied next year when the appeals court rules on the Martin-Reynolds fluorine case—unless that ruling only prompts an appeal to the U. S. Supreme Court.

Look to Reynolds Metals Co.'s appeal of a \$38,293 judgment in the case of ranchman Paul Martin for precedent on private lawsuits over alleged human injury from industrial air pollution.

Reynolds—which, like many makers of aluminum and other chemical process materials, has been plagued by numerous claims for injury and property damage from factory exhaust fumes—has definitely decided to petition the U. S. Court of Appeals in San Francisco to reverse the Sept. 16 verdict in a district court at Portland, Ore. There the jury awarded that amount to the Martin family after hearing conflicting medical testimony on the point at issue:

Were Martin and his wife and daughter injured by fluorine fumes from Reynolds' aluminum reduction plant?

Trail Blazer: This is believed to be the first case in which an outsider has convinced a court that he has suffered physical injury from the fumes of a plant some distance away from the party's home or business. There have been a number of workmen's compensation cases in which and employee has been found to have been hurt by fumes inside the plant where he worked; but in this case, the Martins lived more than a mile from the Reynolds plant and had no connection with the company.

The plant concerned is on the Columbia River near Troutdale, Ore., some 15 miles east of Portland. It was built and operated for the federal government by Aluminum Co. of America during World War II, and then-in 1946-was acquired by Reynolds. At that time, the plant had open pots and hoods over the furnaces, and all fumes were emitted into the atmosphere untreated. Since then, Reynolds has installed-at a cost of \$2.5 milliontreatment equipment that handles waste gases at a rate of 2.25 million cu.ft./minute, including ventilators, centrifuge units, and tower scrubbers.

Up to 1950, the Martins were operating a 1,500-acre cattle ranch on a ridge a mile or so east of the Reynolds

plant. Their first successful move against Reynolds was a civil suit in which they were awarded \$47,000 for damages to cattle and ranch property.

Medical Witnesses Clash: In the personal injury suit, Martin contended that fluorine fumes from the plant contaminated not only the air that he and his family breathed but also the vegetables they grew and ate on the ranch. His principal witnesses and their testimony:

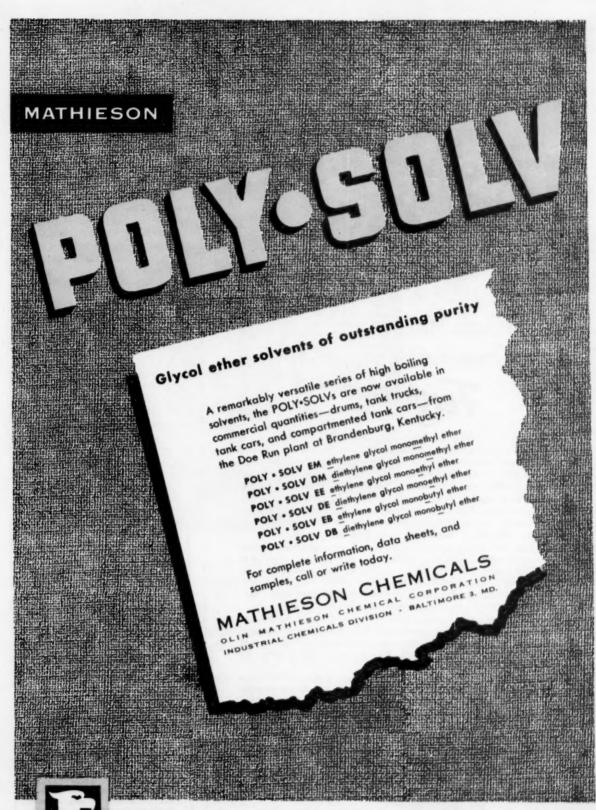
• Dr. Richard Capps, Chicago, testifying as a liver specialist—that he treated the Martins in 1951 for subacute fluorosis poisoning of the liver.

• Dr. Donald Hunter, London, England, testifying as an occupational disease specialist—that Martin's health was permanently damaged because of fluorosis poisoning and that Mrs. Martin and Miss Martin both had suffered stomach cell damage caused by fluorides.

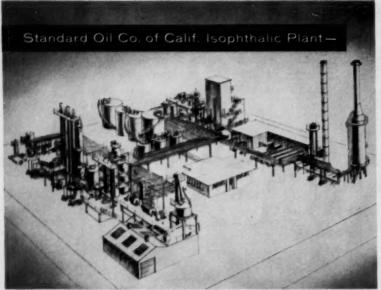
Fluorosis Denied: There were contradictory opinions from defense witnesses. In particular, Reynolds' attorneys tried to keep the jury members from being swayed by evidence about livestock damages in the Martins' earlier suit. A principal defense witness said it was not logical to compare the fumes' effects on humans and cattle, because the cattle would ingest much more fluorine in grass than the Martins would have consumed in vegetables. Other testimony for the defense:

- Dr. W. J. Kehoe, University of Cincinnati, testifying as industrial medicine expert—that the intake of fluorides by the Martins was "not sufficient to have caused injury to vital organs."
- Dr. Willard Machle, Boca Raton, Fla.—that his examination of the Martins in 1951 disclosed no evidence of harmful effects from exposure to fluorides.
- Dr. Frank Princi, Cincinnati, industrial medicine specialist—that the ailments complained of by the Martins were wholly unrelated to their symptoms.
- Dr. Paul Bovard, Pennsylvania bone and X-ray specialist—that X-ray pictures showed no evidence of bone change due to fluorosis or any indications of enlarged liver.

Three Errors Charged: The jury deliberated a day and a half before making its awards. Reynolds promptly began planning an appeal, which is



ETHYLENE OXIDE - ETHYLENE GLYCOL - DIETHYLENE GLYCOL - TRIETHYLENE GLYCOL - POLYGLYCOLS - DICHLOROETHYLETHER ETHYLENE DICHLORIDE - METHANOL - SODIUM METHYLATE - ETHYLENE DIAMINE - CAUSTIC SODA - SODA ASH - CHLORINE - SULPHURIC ACID SULPHUR - AMMONIA - NITRATE OF SODA - BICARBONATE OF SODA - CARBON DIOXIDE - SODIUM CHLORITE - CALCIUM HYPOCHLORITE



Artist's sketch of new \$7,000,000 addition to Standard Oil of California'z huge refinery at Richmond, Calif. Built and equipped by Ferguson, plant makes a new petrochemical product for improving paints and plastics.

another "first"... built by

This facility for making Isophthalic, a new petrochemical product, is the result of a successful combination of factors: long research by California Research Corporation (an operating company of the Standard Oil Co. of California)... designs developed by Standard's engineers... and the construction skill of Ferguson engineers. Isophthalic is used to improve the quality of paints and plastics. With the Ferguson-built and equipped plant, 50 million pounds of the substance will be produced for sale by the Oronite Chemical Company, another of Standard's operating companies.

The project involved assembling and installing an extensive range of processing equipment... fabricating and placing a maze of piping (26 lineal miles in all)... installing 148 pumps and 40 storage tanks. Drawing upon previous petrochemical-plant-building experience, Ferguson divided its 700-man force into three flexible work groups to speed completion.

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expected to be based on three points of law on which it feels the trial court was in error: charging the jury that if cause and effect are shown, no proof of negligence is needed; allowing the Martins to introduce evidence from their livestock suit; and refusing the Reynolds request that the jury be instructed that the suit had been filed after the time permitted by the statute of limitations.

But for Reynolds and Alcoa—which have paid out sums probably totaling several hundred thousand dollars on awards and settlements on air pollution damage claims—the tide may be turning. In the Martin case, Judge William East refused to let the "punitive damages" count go to the jury, ruling that there was no evidence that any injury had been intentional.

And although similar suits are popping up in other parts of the country (see box below), Reynolds appears to have come up with a stopper for other livestock cases. Late last year, the federal court in Tacoma, Wash., found that Reynold's two smelters in the Pacific Northwest had been so well equipped for pollution control that he threw out claims by 18 farmers seeking a total of \$875,000 for damage to dairy cattle and pasture land. The controls, Judge George Boldt agreed, were "fully effective."

Fights Over Fumes

(Other current civil suits based on claims for injury or property damage from chemical process plant fumes)

- At Galveston, Tex.—Leader vs. American Oil Co.—asking \$16,-500 for alleged injuries to parents and daughter from "noxious and caustic gas, oil, and vapor."
- At Columbia, Tenn.—Hanson vs. National Carbon Co.—asking \$50,000 for asserted damage to 560-acre farm from "smoke, dust, fumes, gases and other noxious substances."
- At Beaumont, Tex.—Killough Boiler & Welding Works vs. Magnolia Petroleum Co., Olin Mathieson Chemical Corp., and Texas Gulf Sulphur Corp., asking \$151,084 plus interest for purported damages from "various vapors, gases, and particles of solid matter"; also asking injunction against continued contamination.

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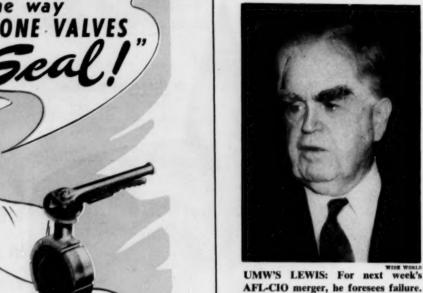
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LABOR.

M-Week Near: Next week is merger week for the AFL and CIO, and steps may be taken during the five-day joint convention to hasten the possible merger later on of CIO's Oil, Chemical & Atomic Workers and AFL's International Chemical Workers. OCAW's executive board met last month in Kansas City, and ICWU's executive board was to be in session this week in New York.

Still on the outside and scornfully looking in is John L. Lewis, whose United Mine Workers (Ind.) membership includes an asserted 100,000 chemical plant employees in its District 50. Lewis darkly predicts that the merged AFL-CIO will "part like the rope of sand it is," and warns that the proposed constitution for the new organization vests too much power in the executive board and would allow large, "cannibalistic" unions within the federation to gobble up smaller unions.

While AFL and CIO leaders made no effort to bring the UMW into negotiations for next week's merger, AFL Secretary-Treasurer William Schnitzler says that thereafter "we'll look forward to other unions coming in."

No Lunch-Hour Pay: Employees of Ethyl's plant at Baton Rouge have lost their lawsuit to get overtime wages for their half-hour lunch periods. In an opinion by Justice Robert Ellis,





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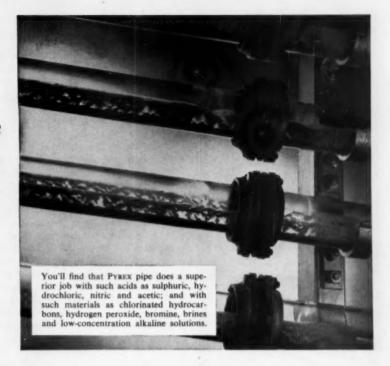
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Engineers and operating men in hundreds of processing plants make similar "no breakage" reports about millions of feet of Pyrex brand glass piping in use today. If you are not enjoying the trouble-free corrosion resistance of Pyrex pipe because you are worried about breakage, why not talk to people who use it daily. We shall be pleased to furnish names.



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One plant superintendent said, "Since PYREX pipe was installed for all of our product lines, maintenance has been practically nil."

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BUSINESS & INDUSTRY.

Jr., the Louisiana Court of Appeal upheld the trial court's decision and rejected the employees' argument that the lunch period was merely stand-by time during which they have to be on the premises to take care of any emergencies that might come up. The court said that an emergency at night might compel the company to call its employees in from their homes, but that this doesn't mean that all 24 hours of an employee's day are working time.

Leveling-Off Seen: Average cost of U.S. companies' industrial relations services has climbed from \$69.34 per employee in 1954 to \$71.47 this year, according to the University of Minnesota's Industrial Relations Center. That increase, however, is the smallest annual rise in the four years that surveys have been made on this figure, indicating that business spending on personal and industrial relations programs is beginning to level off along with consumer prices.

GAW Version Ok'd: The National Assn. of Manufacturers has put its blessing on the kind of supplemental unemployment benefits plan worked out in the glass industry this fall; but still opposes the modified guaranteed annual wage scheme adopted in the auto industry. Chief difference: in the glass plan, each employee has an individual account from which he can get payments while he's laid off.

LEGAL.

Moved to Manhattan: Except for Patent Office proceedings, litigation over Pfizer's tetracycline patent is now concentrated in New York City. The Circuit Court of Appeals has upheld the decision of District Judge Boyd Sloan to transfer Pfizer's three infringement actions from Atlanta to New York, as requested by the three defendant companies-Upjohn, Bristol Laboratories division of Bristol-Myers, and E. R. Squibb division of Olin Mathieson. These three cases are now in the same federal court as those companies' three injunction suits against Pfizer.

Meanwhile, Bristol has gained some ground by getting 34 patents on tetracycline and its production in 11 foreign countries. Company President F. N. Schwartz says these new foreign patents are based on the U.S. process

patent issued to Bristol last July and on other Bristol applications now pending before the U.S. Patent Office. Pfizer holds tetracycline patents in 13 foreign nations (CW, Nov. 19, p. 30).

Schwartz says that while Pfizer has been making tetracycline by a chemical alteration of Aureomycin, Bristol has been using its own direct fermentation process.

Tax on Royalties: Inventor Peter Massey—who took out patents on a process of coating paper at any stage of manufacture—won't have to pay ordinary income tax rates on his royalties, a U.S. Court of Appeals has ruled. "When the owner of a patent assigns it in consideration of royalty payments, the receipt of such payments is properly treated as capital gains realized from the sale of capital assets," says the court.

KEY CHANGES. . .

J. R. Dudley, to director, research and development, Richardson Co. (Melrose Park, Ill.).

Harry A. Batley, to vice-president, industrial production, and Walter B. Morehouse, vice-president, industrial sales, Nopco Chemical Co. (Harrison, N. J.).

John C. Denton, to vice-president and general works manager, Spencer Chemical Co. (Kansas City, Mo.).

Emil Ott, to vice-president and director of research, Chemical Divisions, Food Machinery and Chemical Corp. (New York).

Cyril J. Staud, to vice-president, research, Eastman Kodak Co. (Rochester, N. Y.).

Robert W. Cairns, to research director, Hercules Powder Co. (Wilmington, Del.).

Joseph G. Robinson, to director, Diamond Alkali Co. (Cleveland).

T. R. Miller, to director of development, Carbide and Carbon Chemicals Co. (New York).

James F. King, to assistant to the president, Freeport Sulphur Co. (New York).

ANNOUNCING A NEW SOURCE OF SUPPLY FOR

CAUSTIC POTASH

GAF's modern caustic potash plant is scheduled for production in January, 1956, at Linden, N. J.

Through the mercury cell process, the utmost in quality will be available in both the Standard and Low Chloride Grades.

Completion of this plant will mark the

entry of GAF in the field of heavy chemicals. The same high caliber of technical and manufacturing know-how that made the company foremost in the fields of dyestuffs and surfactants will be employed in the production of caustic potash. Your inquiries will be welcomed.



From Research to Reality

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'LCL' Philosophy-Creed for Service, Bridge to Growth

From tumble-down shacks, large distributors can grow. Twenty years of plushy service to small accounts have upped Don Moran's sales from thousands to millions.

B ACKING an old jalopy into a ramshackle garage in Altoona, Pa., 20 years ago, a 19-year-old youth wondered where his wild scheme might take him.

Barely two years out of high school, and with neither capital nor chemical education, young Donald Moran figured that a market for less-than-carload-lots of chemicals lay untapped in the towns and cities of western Pennsylvania.

Convinced of it, Moran had visited the laundries, dry cleaners, and bottle washing plants in outlying towns and picked up orders. Obtaining a "loan" of caustic soda from a sympathetic distributor, he rented a truck, scraped up a down payment for a car (so he needn't hitchhike to customers), hired a delivery boy, and launched his Western Pennsylvania Chemical Co.

Its first year, 1935—still deep in the depression—was rugged enough. But curiously, the main difficulty was inability to obtain supplies. Understandably, big companies wouldn't extend credit to a teenager with only a rented truck and a jalopy to his name. Somehow, Moran scraped up a \$25,000 volume the first year, finally managed to make a contact with Columbia-Southern Chemical Corp.

The wild idea of two decades ago has taken the company down a long, profitable trail. Western Pennsylvania now counts 34 trucks in its fleet and customers in seven states (Pennsylvania, Virginia, West Virginia, Maryland, Ohio, New Jersey and New York). A staff of 65 employees including eight salesmen and one sales manager handle some 300 basic items from such basic suppliers as Olin Mathieson, Columbia-Southern, Wyandotte, Du Pont, American Cyanamid, Niagara and Westvaco. Warehouses (total space: 100,000 sq. ft.) are operated in Altoona (two), Eric and Harrisburg, Pa.

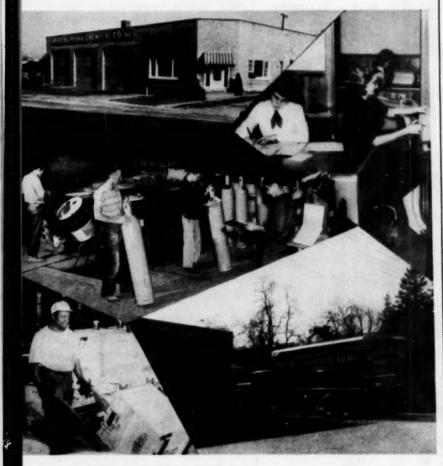
Sales figures, however, reveal the best measure of the firm's success. This year, Moran expects to reach a solid \$2.5 million volume. He discounts his own contribution, credits an "LCL" philosophy with WPC's husky growth. In Moran's jargon, LCL means "Large Comfortable Living" for the small chemical buyer.

In 1935, salesmen rarely called on l.c.l. customers. Shipped by common carrier, orders were slow in coming, carried higher price tags. "Someone had to give the small chemical customer something he never had before—service and attention. That's how we started. That's what we've built our business on."

Today, customers receive same-day service, in most cases; longest, overnight. Operating on more or less regular routes, the trucks try to run between supply sources and Moran's warehouses, delivering chemicals both on going and on coming trips. A single truck will make as many as 20 deliveries a day, sometimes pick up and deliver materials without trucking to the warehouse first. Week-long trips (all carefully planned in advance) for tractor-trailers are not uncommon.

It's the trucking operation that's at the heart of WPC's sales-by-service.

DISTRIBUTION....



By handling his own transportation, Moran saves time at both ends—bringing stock in and depositing chemicals at the customer's doorstep. Although some bulk shipments (e.g., liquid chlorine) arrive in Altoona by common carrier, WPC still picks up 70% of its materials.

Many chemicals trucked into his Altoona warehouses are repackaged under WPC's own name. Buying by the carload and repackaging to smaller sizes, believes Moran, cuts costs, brings in more profits, is well worth the initial investment in containers and the bookwork keeping track of returnables. Many distributors not now following such practice, he adds, could profitably adopt it.

Salesmen, Too: The LCL approach, which has worked out well with customers, applies to WPC's staff, too. Salesmen, for example, besides the usual car and expense allowance, get

a handsome fixed-percentage bonus (paid monthly) for meeting quotas. If yearly quotas are met, the salesmen gets a salary raise, but next year's quota is upped.

Moran augments his selling staff himself, sometimes flies his own plane to outlying accounts. And, while like most distributors WPC offers no technical service as such, Moran will call in his suppliers when service is needed by a customer.

Manner of Man: Service, repackaging, small customers, and trucks don't quite explain, however, WPC's spurt to the \$2.5-million/year sales bracket. Moran himself is part of the reason.

Sometimes working around the clock, WPC's still-young president never quite banishes company affairs from mind—even when relaxing at the golf course or on a deep-sea fishing sail.

In this era of "big" business, some



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DISTRIBUTION.

pessimists number the days of the small chemical businessman. But such calculations reckon without individual initiative and the fact that small firms can do some things better. As Moran points out, the small customer responds to the kind of service that provides "Large Comfortable Living."

New Production: Flexol plasticizer 10-A (didecyl adipate) with reduced volatility and improved resistance to water extraction—for use in calendered film and sheeting, profile extrusions, dip coatings, slush moldings, electrical insulation—is now available in tank-car quantities from Carbide and Carbon Chemicals Co. (New York).

• Potassium iodate, of interest to makers of salt blocks and trace mineral feed mixtures, is now available in tonnage from Deepwater Chemical Co., Ltd. (Compton, Calif.).

 Three new polyester resins for premix molding are being offered by Allied Chemical & Dye Corp. (New York), following up its new premix molding techniques of making reinforced plastics.

Packaging Progress: Valve bag packing machines named Ful-Pac are now available in single- and twinspout packers from Fulton Bag and Cotton Mills (New Orleans).

• Freon-12, Freon-114, sulfur dioxide, Freon-22 and methyl chloride refrigerants are now available in disposable Charg-A-Cans from American Potash & Chemical Corp. (Los Angeles).

 Disposable, no-deposit containers for laboratory consumption are being offered by Corco Chemical Corp. (Bristol, Pa.) for its C. P. reagent-grade acids.

 Multiwall bags reinforced with structural strips of kraft paper in gusset areas and along the edges are now being offered by St. Regis Paper Co. (New York).

 Inner liners of polyethylene film in paper bags are being used by Turco Products, Inc. (Los Angeles) to package dry chemicals.

• Steel drums for the oil and chemical industries in the Southwest will soon be coming from a new plant recently dedicated by Jones & Laughlin Steel Corp. (Pittsburgh) at Port Arthur, Tex.

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LIME AND CARBIDE from North American Cyanamid will now be . . .

Reaching Home Markets

New nourishment for the chemicalshungry Canadian industry is now streaming into its supply veins.

North American Cyanamid Ltd. (wholly owned by American Cyanamid Co.) has begun to sell, for the first time in Canada, some raw materials turned out at its Niagara and Welland, Ont., plants. The chemicals: ammonia, ammonium nitrate, nitric acid, carbide and lime.

These materials have long been synthesized in Canada. But, until now, North American Cyanamid vended them only in the export market. Fast-thriving Canadian chemical industry, however, has made domestic sale of the raw materials a profitable possibility. And, there are other reasons:

- Shipping expenses now make Canadian markets more desirable.
- Dominion sales will allow diversification into other industries. (Much of its current production is used captively in fertilizer manufacture.
- Establishing sales now will give the company a head start on competitors considering similar moves, serve (so North American Cyanamid hopes) to discourage others from coming in.

Campaign for Canada: Just what the specific sales plans of North American Cyanamid are for its new distribution, the company won't divulge. However, augmentation of the current sales force (which sells other Canadian-produced Cyanamid chemicals) seems a good bet. And it's believed that the sales bull's-eye includes the uranium, pulp and paper, nylon, explosives, synthetic rubber, mining, and chemical intermediates industries.

By developing sales in these and other markets, the firm hopes to eventually eliminate foreign (excepting U.S.) markets, and build Canadian sales equal to its sales in the United States.

More Education

The growing need for following chemical products into consumer markets has been pointed up again with Dow Chemical Co.'s (Midland, Mich.) appointment of its new director of consumer education.

Operating under the aegis of the public relations department, the new director, Margaret Doughty, will set up a comprehensive program to aid consumers in their use of end-products containing Dow-manufactured chemicals.

Like many another chemical producer, Dow has for some years had an expanding interest in meeting consumer needs. Miss Doughty's office will work in two ways:

- Interpret consumer needs and attitudes to sales and development management.
- Show consumers the finer points of utilizing Dow products.

Dow's penetration of consumer fields stems from a number of its manufactures. Do-it-yourself painters come in contact with latices in decorator paints, homemakers meet saran in carpeting, upholstery fabrics and wrapping material. Others use plastics, ion-exchange resins.

At present, Dow consumer activities are largely concerned with extension services and press, radio and television; but the company expects activities to enlarge while its consumer interests swell.

MCA Accents Sales

Chemical commercial development is changing and changing fast. "You have to do more, you have to spend more, you have to go out to customers and tell them how to use the product." That's how session-goers at the winter meeting of the Manufacturing Chemists' Assn. in New York last week heard John Field, vice-president of sales development for Carbide and Carbon Chemicals Co., delineate to-day's development.

Reviewing the advances of chemical development, Field stressed the accumulating importance of timing and patent considerations. New products should be in the hands of customers as soon as it is possible (consistent, however, with basic rules of development).

Lever: Patents can be a sales tool and use-patents, as a result of recent decisions, are more powerful than they were a year ago. Obtaining a patent position, Field continues, is worth the effort. Producers can share with customers the benefits of its own research laboratories, create customer goodwill. And, of course, the patent prevents competitors from muscling in.

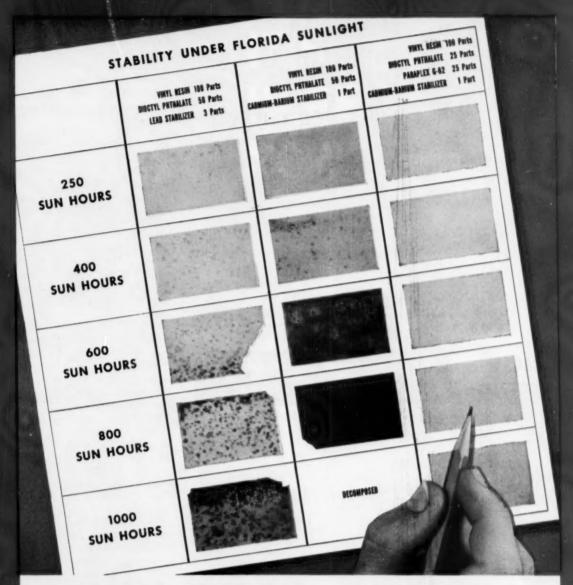
Home Sales: The path of commercial chemical development doesn't inevitably end with a tank car on a factory siding. Increasingly so, basic chemical producers are compounding novelties, seeking new sales fields with consumer products.

Making the market for consumer items isn't easy, nor is it cheap. Mass-media advertising in copious quantities can do the job, however, said Paul Slawter, Jr., vice-president of G. M. Basford.

Reeling off examples, Slawter pointed to the role advertising plays in creating demand for many consumer chemical products. Some:

- Sherwin-Williams Co. has expended at least a million dollars per year in Super Kem-Tone promotion since introducing the product in 1950.
- Gold Seal Co., producers of Glass Wax, spend about 25% of total income on advertising.

The newness of many consumer chemical products and the esteem in which the populace holds scientists combine to form a potent sales appeal. And, argues Slawter, advertising is an essential medium for dispensing it to the public.



Florida Sun Proves Value of Paraplex G-62

The stabilizing effect of Paraplex G-62 in vinyl compounds was dramatically demonstrated during recent tests under intense Florida sunlight. The samples shown here were exposed for periods ranging up to 1000 sun hours. The improvement imparted by Paraplex G-62 is clearly shown by the exposed samples.

In other tests in the field, as well as by Weather-Ometer, Fade-Ometer, and 450°F. oven tests, the results were similar: outstanding resistance to embrittlement and discoloration when PARAPLEX G-62 plasticizer-stabilizer was used.

PARAPLEX G-62 polymeric-type plasticizer also permits fast calendering and low stabilization costs. It provides uniform color and excellent permanence.

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Write for "What You Should Know About the PARAPLEX and MONOPLEX Plasticizers", a handy summary of properties and applications.

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As a catalyst carrier, COLUMBIA Activated Carbon is outstanding—one cubic inch of a typical pelleted form has a calculated active surface area of more than 88,000 square feet!

And, COLUMBIA Activated Carbon is hard, durable, inert. It has low ash content and is not affected by most chemical agents and conditions.

It is supplied in a wide range of porosities and in particle sizes ranging from a fine powder to 3/16-inch pellets.

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Metso Anhydrous, technically pure anhydrous sodium metasilicate, has the true metasilicate ratio. It is high in silica (SiO₂)—low in CO₂ impurity. Thus you are assured full benefit from the soluble silica performance.

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DISTRIBUTION. .

Expanding Sales Coverage: Rawson & Co. (Houston) and Wm. H. Mason Co. (Tulsa) have been appointed sales representatives for Petro-Chem Development Co. (New York) in Texas, Oklahoma, Louisiana, Arkansas and Kansas City, Mo.

• New storage facilities for distribution of its soil fumigant D-D^R in the Southeast have been installed at Wilmington, N. C., by Shell Chemical Corp. (New York).

• Canadian Chemical and Cellulose Co., Ltd., will build a warehouse, textile processing plant, and application lab in St. Jean, Que.

The Matheson Co., Inc., has announced plans to set up a new gas division in California to carry complete stocks of its 55 different gases currently distributed from New Jersey and Illinois.

For Your Reference: Listings of trade shows and expositions for as far in advance as 1964 have just been issued in the 1956 schedule by the Exhibitors Advisory Council, Inc. (New York).

 "Epsilon Caprolactam" is the subject of Technical Bulletin I-14, 10 pp., covering chemical and physical properties, basic reactivity, vapor pressures, infrared absorption spectrogram and references. It's from Allied Chemical & Dye Corp. (New York).

 Rubber chemicals in the footwear industry and their compounding formulas are listed in a 26-p. booklet prepared by United States Rubber Co. (New York).

• Isosebacic acid — a mixture of C-10 aliphatic dicarboxylic acids used as intermediates in production of plasticizers, ester lubricants, alkyd resins, reinforced plastics, polyamides and polyurethane resins—is treated in a data bulletin available from U. S. Industrial Chemicals Co. (New York).

"Dylan Polyethylene for Pipe Extrusion" and "Dylan Polyethylene for Injection Molding" are subjects of two 16-p. technical bulletins recently issued by Koppers Co., Inc. (Pittsburgh).

Activated charcoal—Use of charcoal in the distilling industry is treated in a new bulletin. Some topics: elimination of loss in aging, bottling, fermentation and venting; spirit purification; air sterilization. Barnebey-Cheney Co. (Columbus, O.).

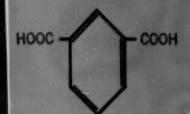
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A totally new raw material

Oronite Isophthalic offers new

Isophthalic is new! Oronite Isophthalic is a white crystalline product chemically similar to phthalic anhydride but considerably different in physical properties and reaction characteristics. Development work on Isophthalic has been continuous since 1947, when it was first a laboratory curiosity. In the last five years pilot plant quantities have been used in many end-products to evaluate the many improvements contributed by Isophthalic.

Isophthalic is good! Our field tests and the laboratory and field tests of others have proved Isophthalic alkyds add product qualities which cannot be obtained from conventional phthalic anhydride resins. You will discover from your laboratory work improved qualities of durability, adhesion, toughness, quicker drying, heat stability, water resistance, chip resistance, gloss and color retention contributed by Isophthalic based resins.

Will Isophthalic benefit you? Evaluate it in your own laboratory for new or improved products—compare it with your existing standards. This way you can be sure it will fill your individual requirements for superior, more competitive products.

Isophthalic Alkyds

Oil modified Isophthalic alkyd resins are superior to phthalic anhydride alkyds in several important respects. Longer oil length resins can be produced that dry faster to tougher, more flexible films, and the longer oil lengths result in cost savings. Excellent thermal stability is characteristic of these resins at all oil lengths. Baking-type alkyds show better performance in overbakes, and medium and short oil Isophthalic alkyds produce enamels that are tougher and more resistant to impact with excellent hardness, soap resistance and gloss retention.

Isophthalic based resins produce durable, quick-dry, throughdry, mildew resistant exterior paints. Appliances will also benefit from harder, more durable, chip resisting enamel finishes possible from new Isophthalic based resins.



for paints, enamels, resins and plastics

horizons for marketing new and improved products

Isophthalic is here! Commercial production from the new multi-million dollar Oronite Isophthalic plant is planned for late 1955. **If you are a manufacturer** of paints, resins, surface coatings or plastics—evaluate Isophthalic in your own laboratory or ask your raw material supplier about it. **If you are an industrial user** of paints, enamels, or a plastics processor—contact your source of supply or write Oronite directly for further information.

Isophthalic is another Oronite first! Oronite Chemical Company was a pioneer and is today a leader in developing and marketing petrochemicals for industry. Versatile but often unseen Oronite chemicals are silent partners in many, many industries—providing new products, economies in manufacture and increased values in scores of everyday products.

Here are some of the major chemical "firsts" scored by Oronite. First petrochemical detergent alkylate • First ortho, meta and para-xylene • First odorant for natural gas • First petrochemical phthalic anhydride • First heavy duty lube oil additives • First polybutenes • First phenol in U. S. from petroleum • First U. S. naphthenic acids and naphthenate paint driers • First petroleum cresylic acids.



Isophthalic Unsaturated Polyesters

Oronite Isophthalic is an advanced raw material for the production of unsaturated polyesters for use in glass fiber reinforced plastics. A mixture of Isophthalic with other materials will yield higher molecular weight products than is possible with phthalic anhydride modified unsaturated polyesters. They are also higher melting solids that can be pulverized readily to a free-flowing form. The solubility of Isophthalic unsaturated polyesters in styrene is excellent, and resulting copolymers show improved strength characteristics.

Almost indestructible glass fiber luggage, already a major production item, has been significantly improved by use of an Isophthalic based plastic. Greater flexural strength in these polyesters can be obtained from Isophthalic. Phthalic Anhydride

Isophthalic

Phenol

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Woodpecker Repellent



PILEATED WOODPECKER: His costly diet—utility poles.

A FTER several years of searching for a way to stop pileated woodpeckers from turning solid poles into useless shells, utility companies are no closer to a solution now than they were to start with, but they're more determined than ever to find one.* The pursuit of an effective repellent has now become a matter of utmost urgency.

This year, pileated woodpeckers will damage almost 3 million utility poles, pile up losses estimated at "many millions" of dollars. In drilling for food, excavating for nest sites, or for other reasons still undetermined, the bird makes no distinction between trees and utility poles. Actually, no one knows for sure just why the birds do attack poles.**

* Many varieties of woodpeckers wreak havoc on utility poles, but the particular type known as the pileated woodpecker leads the assault, far overshadows the others in the extent of its depredations.

** Finding out is the first objective of a research project recently established by a grant from four power companies at The Pennsylvania State University School of Forestry. The second objective will be concerned with a way to stop them.

† National Audubon Society photos.

Point of Attack: But once they start on a pole, the birds generally don't stop until the pole starts swaving under the weight of its power lines. More than once, a single pileated woodpecker hard at work has carved out a cavity 5 in. across and almost 1 ft. into the center, left over a bushel of sawdust in its wake. To make matters more difficult, the pileated woodpeckers, protected by conservation laws, have been increasing in number. Varieties of the bird now occur throughout the United States and Canada, causing destruction wherever they range. Nor are their depredations limited to utility poles. To a lesser degree, the birds also attack buildings, valuable shade trees, and various other wooden and sheet metal structures; but the birds' predilection for nest sites at least 20 ft. (and preferably much higher) aboveground saves these smaller objects from widespread attacks.

There's a \$12-million year purse waiting for anyone able to stop the raiders. This is the price Penn.

State's Richard Jorgensen believes utility companies would pay—and quickly—for permanent protection. Here is how he figures it: Out of 12 million poles used each year, an estimated 3 million are particularly vulnerable to attack because of location in heavily wooded sections — natural habitat of the birds. Utility companies now pay \$3-5/pole for preservation, would gladly spend an equal amount on an effective repellent for the 3 million vulnerable poles.

Unsavory but Safe: The obvious answer to this problem—systematic extermination of the marauding species—is out. An appetite for tree-destroying insects has made the pileated woodpecker a pet of the forest conservationists, safeguarded by federal and state laws.

Meanwhile, the birds continue carving up poles, defeating one attempt after the other at stopping them. Here are just a few of the hurdles already cleared by the birds:

• Some companies lashed holed sections of old poles to the top of replacement poles, others simply left old poles next to new poles. In both cases, for reasons known only to them, the woodpeckers ignored the old poles and attacked the new ones.

 A few firms tacked red flannel streamers, metal strips, or metal flashers to the poles. The birds held off only long enough to make sure the gimmicks were harmless.

• Some companies wrapped poles, except for the top 8 ft., with 19-gauge, ½-in.-mesh hardware cloth. Woodpeckers tore through the material; in some cases, they even chiseled out hardening compounds used to plug old holes and reinforce the poles. Use of poles made from imported, very hard, oily wood also proved ineffective.

Line of Resistance: As a result, the search for an effective repellent has turned to chemical companies. A number of compounds

(Continued on next page)



We get them often. It says, "Ship 10,000 100-1b. Chase Bags!" Yes, Chase customers have confidence in us—and we have confidence in them.

Two or three times each month, this same Chase customer—a Texas chemical company*—sends us a similar memo. "Jack" knows "C.M.T." and what he wants. There's never any question.

SERVICE THAT SATISFIES

To us, knowing our customers' needs is just as important as knowing our products and today's chemical packaging picture. It makes no difference whether your chemicals are inert, moisture-sensitive, or "heavy"... there's a modern Chase bag that's just right—carefully selected and developed for low-cost dependability.

Let us show you why Chase has merited the confidence of so many customers.

*Name on request

Whatever your chemical packaging needs...



target

(continued)

Woodpecker Repellent

have already been tried; none has yet proved effective.

Right from the beginning, fully creosoted poles fell under attack by the miscreants. Other coal tarbased formulations have similarly failed to deter the birds. One power company tried (unsuccessfully) spraying the poles first with a 5% solution of pentachlorophenol in a light petroleum solvent, then painting them with formaldehyde and a nonhardening compound with a bituminous base and a medicated odor. Another compound based on a trinitrobenzeneaniline complex, a rabbit repellent, also proved useless. (Penn. State's captive woodpecker sat on the brush being used to paint test poles with the complex.)

Other formulations using alkalis to give the birds harmless "hotfoots" have also failed. Nonetheless, the chemical line of attack still seems the most promising, says Jorgensen, and there are several new repellents now undergoing or ready for test runs. One of these, nicotine sulfate, successfully repelled pigeons and sparrows and will soon be tried on the woodpecker. Another, Roost-No-More (National Bird Control Labs, Skokie, Ill.), has effectively deterred pigeons and starlings from settling on public buildings, is now being tested against woodpeckers on Gulf States Utilities' poles in Beaumont, Tex.

From findings so far, it seems that the pileated woodpecker is not ordinarily repelled by smell or taste, that for any chemical repellent to prove successful, it will have to be much stronger than creosote or any of the other compounds tested to date. In addition, the ideal chemical repellent will include, among others, these characteristics:

- Safety. It must in no way injure the pileated woodpeckers.
- Easy application. It must lend itself to painting or spraying, since these are the only practical methods of treating poles already in place. For new poles, the repellent should be miscible with standard preservatives, able to be applied at the same time as the preservatives.
- Durability. Poles must last for 30 years, and a repellent should—ideally—remain effective for the life of the pole. (Repellents that last for shorter periods but are inexpensive and easily applied should not be counted out.)
- Cost. An effective repellent meeting all these requirements, Jorgensen figures, could bring (including application) as high as \$5/pole.

Any company that thinks it has a compound that will do the job should contact Richard Jorgensen, Pennsylvania State University, School of Forestry, University Park, Pa.

Jorgensen will first test samples on poles placed in the cage of their captive pileated woodpecker. If a formulation shows promise, he will then put it through its paces in the field.

This research group at Penn. State, of course, isn't the only one concerned with the problem. Utility companies, telephone companies, chemical companies, conservationists, and others from California to Texas to Maine on up into Canada are in similar pursuit of an answer that has eluded researchers since 1906 when the problem first came to light. But from all these years, nothing has yet come to stop the depredations of the pileated woodpecker; and, for the nonce at least, the poles remain unprotected.

Ethylene Glycol Diethylene Glycol

High boiling point, low volatility and good miscibility characterize Ethylene Glycol and Diethylene Glycol. Highest commercial purity—achieved by a direct oxidation process—characterizes Nitrogen

Division Ethylene and Diethylene Glycols.

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Life on the Chemical Newsfront



DO-IT-YOURSELF ENTHUSIASTS will get a helping hand with home painting from new line of Accosperse* Pigment Dispersions for rubber-base paints. These pigment dispersions mix easily, with no milling, into late paints without streaking or specking. They have high color concentration, ideal consistency, wide compatibility with alkaline emulsions and excellent storage stability. Intermixing will provide an almost limitless array of beautiful shades and tints that are free flowing and non-streaking. (Pigments Division)

Chemistry comes to the aid of the retailer





NEW IDEA: protecting merchandise from sun-fading by coating store windows with a film containing U. V. Absorber 9! Transparent to visible light, U. V. Absorber 9 soaks up ultraviolet light and changes it to harmless infrared radiation. Research in suitable film formulations has produced a number that the New Product Development Department is prepared to recommend to interested manufacturers. Other applications of this remarkable product include polyester resins, surface coatings and dyes. (New Product Development Department, Section p)

WHITE FABRICS ACQUIRE STRONG SALES APPEAL at the counter through the brilliant whiteness imparted by Cyanamid's Calcopluors White ST. Applied by the fabric finisher, this whitening agent possesses outstanding ability to absorb ultraviolet light, which is re-emitted as visible light to make the fabric much brighter to the eye. It was developed to give white and pastel fabrics the clear, clean brilliance that makes them stand out on sales counters. Mills are invited to send a swatch of their own fabric for comparison treatment. (Organic Chemicals Division)



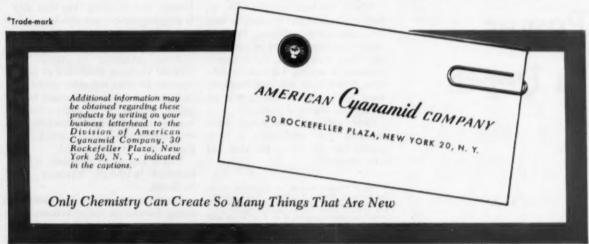


MEDICINE THAT'S EASY TO TAKE. An improved, recently announced Achromycin® Tetracycline dosage form is cherry-flavored liquid Pediatric Drops, which doctors may prescribe for their little patients to take "straight" from the dropper or mixed with milk, water or fruit juices. (Lederle Loborotories Division)



NEW PRECISION PRODUCTION PROCESSES in ceramic manufacture, like the grinding operation illustrated, require use of binders that give high green strength to unfired pieces. The binder also should give good lubricating properties for easy mold release and internal plasticity so that complex shapes can readily be formed. Binders also must disperse thoroughly in the mixing operation and must volatilize completely on firing. In recent evaluations, Hyporam® Emulsions have proved outstanding in these essential characteristics. (Industrial Chemicals Division, Dept. D)

IN THE NEW OXYGEN STEELMAKING PROCESS, pure oxygen is blown against the surface of a molten iron bath. This violent oxydizing reaction removes impurities from the iron in the production of high-grade steel. A Pease-Anthony Venturi Scrubber is employed to prevent air pollution on the first of these operations installed on the North American Continent. This highly efficient scrubber, which removes some 30 tons per day of sub-micron iron oxide from exhaust gases, is marketed by a Cyanamid subsidiary, Chemical Construction Corp.



RESEARCH



HVEC'S NYGARD: In linear accelerators, the answer to . . .

Power In Depth

IMITED penetration is proving a big handicap to direct radiation machines (such as the Van de Graaff and resonance transformer) in their attempt to garner chemical employment. Even at top voltages (3-4 million electron volts) they probe only a fraction of an inch into solids, curtailing their value in synthesis, sterilization, and various other processing jobs. But a comparatively new device-the the traveling-wave linear accelerator -features higher voltage and therefore higher penetration (up to an inch) of matter. It could greatly extend the potential scope of radiation machines in chemical processing. That's why High Voltage Engineering Corp.'s (Cambridge, Mass.) disclosure last week that it had sold what is thought to be industry's first linear accelerator is important.

Now being built for a drug firm, the \$165,000, 6-mev., 4-kw. machine will probably be used for pharmaceutical sterilization.

High Voltage Engineering's chief electrical engineer John Nygard, envisions linear accelerators operating at levels of 10-12 mev., in the foreseeable future. However, Nygard points out that linear accelerators won't necessarily make other machine radiation sources obsolete.

High power requirements—where penetration is easy—are best met by a series of low-voltage machines. Chemical firms contemplating round-the-clock radiation processes find this scheme less costly for power and for maintenance of necessary stand-by radiation units.

Where low-level machines (e. g., Van de Graaffs) can be used, as with gas systems or thin sheeting, they're a more economical source of radiation than linear accelerators. The economic crossover is around 3-4 mev. If voltages higher than this are required, linear accelerators are claimed to be the cheaper source of power.†

Item: radiation cost/pound computations give accelerators a wide margin (around 20¢ to less than 1¢) over cobalt-60.

But linear accelerators, which emit electrons, are not suitable for processing applications that require other forms of radiation. These instruments, for instance, would be of small aid in converting acetylene into benzene, a reaction that is promoted by beta

Big Role: Right now, linear accelerators play a big role in the plans of a number of other electronic firms, including General Electric, Varian Associates (Palo Alto), and Applied Radiation Corp. (Walnut Creek, Calif.) Abroad, Mullard Research Laboratories (Redhill, Surrey, England) has also been actively working in the field.

So far, General Electric has no commercially available linear accelerators or even final models. But the firm is investigating these machines by way of a development contract with the microwave laboratory of Stanford University (Palto Alto, Calif.). GE's radiation generators for chemical use are 1-mev. and 2-mev. resonance transformers (accelerators of a different variety) whose power output was recently raised to 2,100 watts. And the firm is developing a 4-mey, model that it hopes to test next year. The latter should penetrate a tin can, may find use in food processing. Resonance transformers also are suggested for upgrading polyethylene and converting ammonia into hydrazine.

Applied Radiation (ARCO) is currently testing a 6-mev., 4-kw. machine, reports it will operate steadily at 9 mev. at reduced power. Cost: \$125,-000, installed, or about \$135,000 with housing and shielding. The firm also is designing 60-kw. and 400-kw. units, primarily for chemical process applications.

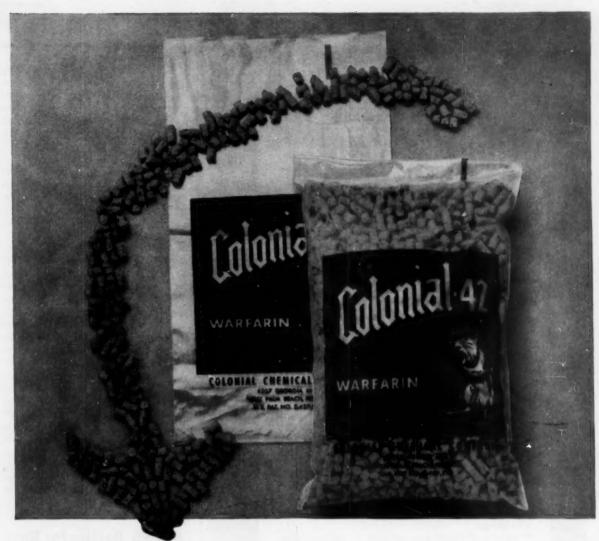
Most promising of these are polymer synthesis, irradiation of polyethylene for wire and cable insulation in high-temperature applications (e.g., guided missiles), in the production of benzene hexachloride for insecticides, and polymerization of ethylene (at an irradiation cost of 2-8¢/lb.).

Varian expects to eventually sell a proposed 8-10-mev. machine for \$125,000.

Petroleum companies are showing strong interest in linear accelerators for, among other things, synthesis of the antiknock agent, triptane

High Voltage intends to quadruple existing facilities, move to a new 87,000-49, ft. building on a 45-acre size in Burlington, Mass. It will provide room for 16 particle accelerators to operate simultaneously, 3 or 4 of which will be under development.

t Power is the key to synthesis or sterilization once penetration is achieved.



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Results with polyethylene packaging have been excellent, according to O. F. Bissen, manager, Colonial Chemical Company, West Palm Beach, Fla. "We save 86¢ on every dozen in package material costs. The labor in filling and closing polyethylene bags is far less compared with former con-

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	\$0. &r. 20/20°E	Pour Point °C	Viscosity Contistokes 28 C	Temp. (°C) for 1000 stakes Viscosity
Mone-estars of: Octanoic Acid Pelargonic Acid Capric Acid Lauric Acid 2, 4-D Acid	0.862 0.865 0.863 0.863 1.153	-73 -57 -57 -32 -40	5.0 5.4 6.9 9.5 59	-73 -73 -73 -73 -73 -32
Bi-esters of: Phthalic Anhydride* Succinic Acid Maloic Anhydride Adipic Acid	0.981 0.933 0.940 0.928	-48 -73 -65 -73	74 16 21 18	-42 -64 -58 -70
Azelaic Acid** Sebacic Acid** Diglycollic Acid	0.917 0.915 0.962	-73 -65 -65	25 27 30	-69 -68 -53
Tri-ester: Phosphate	0.910	-73	17	-68

*"DIOP" is an outstanding all-purpose vinyl plasticizer, now approved for non-toxic applications as in food wrappings.

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Send for INDOIL Technical Bulletin No. 22 for further data.

INDOIL

RESEARCH. .

(2,2,3-trimethylbutane), which has never been made commercially.

As yet, few if any are embarking on a commercial radiation installation, but they're researching hard to find compounds that may be made most economically by radiation, studying the effect of radiation on reactions such as catalytic cracking and polymerization.

At least one oil company (Gulf) is investigating radiation's effect on bacteria that damage oil storage tanks. Viscosity adjustment of fuel oil is another possible radiation task that is being probed.

Another potential use for accelerators is in food preservation, where radiation is already considered economical for some foods (e.g., potatoes). Formidable hurdles here are possible residual radiation and formation of toxic by-products. Linear accelerators will probably be completely safe below 10 mev., may impart slight (although not necessarily harmful) radioactivity at higher voltages.

Even now, chemical firms are looking at radiation reactions that demand levels of power beyond the scope of today's accelerators. (Experimentally, the necessary radiation is built up in a series of dosages.) But bigger and better linear accelerators—now being contemplated—may put even these radiation demands in the realm of commercial practicality.

Switch: Beetles for Rats

Beetles are saving Rutgers University (New Brunswick, N. J.) agricultural scientists money and time. Confused flour beetles, to be exact, the insects are used to evaluate the nutritional value of wheat and soybeans grown with varying amounts of trace minerals.

Data now supplied by 270 beetles—housed in a small glass container—would ordinarily require 90 rats.

While rats are the preferred test animal, they're too voracious for the amount of experimental food available. Not only do the beetles eat less; they also require less care. And, according to M. Wight Taylor and Alfred Meiss, who head the project, they are proving to be satisfactory standins in other respects.

Still to be determined: whether insects can replace animals in other laboratory tests.



This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

BRIGHTNESS OF GROUNDWOOD PULP INCREASED USING CALCIUM CHLORIDE A significant improvement in the peroxide process for bleaching groundwood pulp has been made by the development of a procedure for pretreating the pulp with calcium chloride.

The treatment with calcium chloride <u>before</u> peroxide bleaching <u>increases the total brightness gain by 1-3 points</u>. The pretreatment step is easily carried out, requires very little additional equipment. The benefits of pretreatment have been proved in medium consistency (8-16%) operations, and it is now in use in many mills. A similar application for low-consistency (3-5%) operations is in the development stage. Pretreatment of other types of pulp is being explored.

The amount of calcium chloride usually needed is in the range of 20 to 30 lbs. per ton of moisture-free pulp. The concentration of the treating liquor is usually 2-3 lbs. of CaCl₂ per gallon. Thus, the calcium chloride pretreatment makes possible the production of higher brightness groundwood for the small additional cost of about 40¢ to 60¢ per ton of pulp. The process is particularly effective with groundwood made from old wood, which is usually more difficult to bleach.

Because of its low content of heavy-metal impurities, Wyandotte Calcium Chloride is gaining wide acceptance in this application. Wyandotte Calcium Chloride is available in pellet, flake, and liquid forms.

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USDA'S BEROZA: Master of the most potent fly-killing synergist, he's . . .

Pyrethrum's Biggest Booster

A soft-spoken Dept. of Agriculture chemist, Morton Beroza, last week revealed that he has elucidated the structure of sesamolin—the most powerful pyrethrum synergist* known.

The achievement, says USDA, lays the groundwork for development of: a commercial process of extracting sesamolin from oil of sesame seed; a synthetic sesamolin or sesamolin-related material.

The latter possibility is causing most stir among enterprising research men, despite the complexity of the target molecule. Sesamolin, according to Beroza, turns out to be 2-(3,4-methylenedioxyphenoxy)-6-(3,4-methylenedioxyphenyl)-cis-3,7-dioxabicyclo(3.3.0) octane.

But that isn't altogether a surprise. It's well established that pyrethrum synergism is associated with the methylenedioxyphenyl grouping; sesamolin's methylenedioxyphenoxy fragment, however, is unexpected and not found in the most effective pyrethrum synergists heretofore known.

It's this molecular bonus that is believed to be the key to the premium

* Also isolated for the first time by Beroza.

activity of the complicated sesame oil derivative: sesamolin in a 1:1 (by weight) mixture with pyrethrum increases the latter's fly-killing power by 31 times; a 12-time boost is about the best that commercial synergists can manage—and that's in a 5:1 (synergist-insecticide) ratio. Moreover, sesamolin is said to accentuate the "knock-down" ability of pyrethrum.

Following this lead, Beroza synthesized 66 compounds containing the methylenedioxyphenyl group, found many to be excellent synergists. Some, he reports, are more active than "the best commercial synergists now available." But none is as good as sesamolin, which he obtained from its natural source.

Key to the synthesis problem is 3,4-methylenedioxyphenol, also known as sesamole. If this substance could be made in quantity at a reasonable cost, the way would be essentially clear for bulk production of sesamolin, as well as the potent members of Beroza's 66 other synergists.

As a matter of fact, a readily available synthetic sesamole could work substantial changes in existing comRESEARCH. . .

mercial pyrethrum synergist processes, the majority of which fall back upon naturally derived safrole as a starting material.

Active Pursuit: Several companies have spoken with Beroza on the sesamolin problem, and at least one is actively pursuing a synthesis. When the USDA chemist's work is published—neither final structural studies nor corollary entomological data have yet appeared in print—further industrial interest is sure to develop.

Encouragement for intrepid synthesis seekers lies in the fact that Beroza has already succeeded in putting together sesamin, a structural cousin of sesamolin. Sesamin is 2,6-bis(3,4-methylenedioxyphenyl)-cis-3,7-dioxabicyclo(3,3,0.)octane. Beroza has not yet tried his hand at making sesamolin in the laboratory, hopes to embark on this task soon.*

Back to Nature: On the other side of the coin, of course, is the possibility of working up a good process to take the powerful synergist out of sesame oil. Any such approach, though, would be predicated on an ample and reliable supply of the oil—and at this point that's something less than assured.

Sesame plantings in the United States this year amount to only 12-15,000 acres, mostly in Texas and other Southern states. USDA expects this figure to increase, has taken steps to encourage sesame farming in the South. To this end, the department has participated in cooperative state-federal research that recently yielded new strains (with nonshattering seeds) suitable for harvesting by mechanical methods.

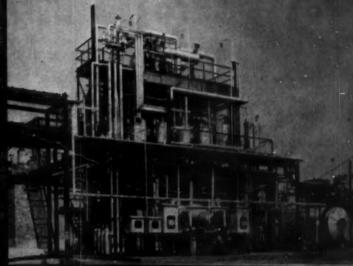
But there's still a long way to go before the nation's sesame output is sufficient for the needs of the insecticide industry. Commercial synergists (sulfoxide, piperonyl butoxide, piperonyl cyclonene, n-propyl isome, etc.) are estimated to be incorporated into 50 million lbs. of pyrethrins (or related materials) sold annually in this country.

For the agricultural community, that represents severe demands; to the chemical industry, it smacks of potentially lush rewards.

^{*} Also worth noting are the efforts of Edwin Haslam and Robert Haworth at the University of Sheffield (England), and H. Erdtman and Z. Pelchowicz at the Royal Institute of Technology (Stockholm, Sweden). Both groups have contributed to knowledge of seamolin's chemical nature, although neither has a commercial interest in the material.

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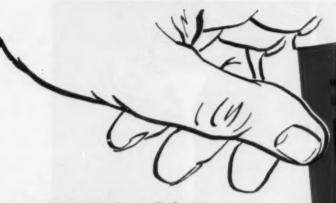
Fungus Stoppers: New dithiocarbamate fungicides, synthesized at Iowa State University (Iowa City) are reportedly equal to or more active than undecylenic acid. Esters of ethylene bis-dithiocarbamic acid were made by condensation of disodium ethylene bis-dithiocarbamate with an alkyl halide. The diallyl ester showed highest activity in tests against five pathogenic fungi.

Better Rosin: A free-flowing rosin said to expedite shipping and handling was recently developed at Battelle Memorial Institute (Columbus, O.) for G. and A. Laboratories (Savannah. Ga.). The rosin is prepared in pellets that reportedly do not fuse up to 130 F, or cake under pressure when stacked in bags. The composition contains an anti-oxidant, is based on iodine-disproportionated rosin, reports Battelle.

Tranquilizer: Newly issued patent 2,724,720 dealing with tranquilizing drug Miltown (2-methyl-2-n-propyl-1,3-propanediol dicarbamate) has been assigned to Wallace Laboratories (New Brunswick, N. J.). Several related applications are still in the works. Miltown, generically named meprobamate, is marketed as Equanil by Wyeth Laboratories under license from Carter Products, Inc., of which Wallace is a division.

TB Chelates: According to recent studies at the University of Wisconsin (Madison) School of Pharmacy, a series of iron, copper and chromium chelates of o-hydroxyazonaphthols and o-hydroxyazophenanthrols suppresses the growth of the tubercle bacillus both in vitro and in vivo.

Documentation: Believed to be the first of their kind, courses in machine literature searching and language engineering will be offered this spring at Western Reserve University's (Cleveland) school of library science. The machine searching course will include recently-developed methods and equipment for analyzing, storing, correlating and retrieving recorded information (including chemical data); punched cards and other systems now being developed; and coordination of new techniques with conventional indexing and classifying methods. Course instructors will be James Perry and



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cate the relative coarseness or fineness of the material.

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RESEARCH. . .

Allen Kent, director and associate director, respectively, of Western Reserve's Center for Documentation and Communication Research.

PAS Salt: The recent finding of J. W. Clegg at Brompton Hospital, London, indicates anti-TB potential for the p-amino salicylic acid salt of isoniazid. The salt was reportedly effective against TB strains resistant to isoniazid or PAS, either alone or in combination. Tests were made in vitro and on a small number of patients. The latter reported absence of nausea associated with large doses of PAS.

New Labs: Three laboratories are in the news this week:

- Rising on a 35-acre tract between Hastings and Ardsley, N.Y., Geigy Chemical Corp.'s new \$3-million laboratory and headquarters office is expected to be completed early next summer. To assist color matching in dyestuffs research, all buildings have white interiors, with exteriors of insulated white porcelain-enameled panels. The building will house 350.
- Uranium processor Vitro Corp. of America plans a new \$1-million laboratory near Silver Spring, Md. Slated for completion by 1957, the lab will provide 55,000 sq.ft. of usable floor space for 350 staffers engaged in chemical, physical, and engineering research.
- Process development, application research and testing of urethanes are already under way at Mobay Chemical Co.'s newly completed New Martinsville, W. Va., research laboratories. Feature: floors coated with urethane paint, said to be long-wearing and highly resistant to chemicals. Mobay (jointly owned by Monsanto and Farbenfabriken Bayer, A. G.) employs 60 researchers headed by E. E. Hardy, formerly of Monsanto's inorganic chemicals division.

Preservative: Recent studies at Chas. Pfizer & Co. (Brooklyn, N.Y.) indicate that a dip into dilute Terramycin or streptomycin solution will double the storage life of mixed salad greens. Traces of Terramycin are said to prolong the freshness of pasteurized milk from two days to several weeks. Ten parts of the antibiotic/million parts of slush-ice reportedly lengthens the storage period for poultry from one week to two.



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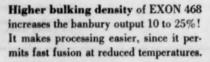
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Technology

Newsletter

CHEMICAL WEEK DECEMBER 3, 1955 Linear polyethylene may become as popular in France as it is in the United States—if present negotiations (CW, Technology Newsletter, Nov. 12) gel as expected.

As yet, there's nothing official on it. But St. Gobain has been itching to get into polyethylene production, has been dickering with Phillips to use the latter's low-pressure process.

Ethylene Plastiques, the present producer of polyethylene (owned by three separate interests including Pechiney) uses the ICI high-pressure process, to which it has exclusive rights; but it too may branch out into the linear type—via the Ziegler process.

And L'Aire Liquide, which has been eyeing the possibility of making polyethylene, may at this minute be negotiating with Ziegler.

Open-pit mining won't be the only innovation of Pacific Coast Borax's new \$18-million plant at Boron, Calif.

The company is also counting on improved processing and materialshandling methods to insure profitable returns from a grade of ore lower than it obtains by more-selective mining methods. To this end, the plant's concentrating and refining equipment will include oversize Dorr-type thickeners operating at close to 200 F.

But perhaps the biggest change will be the switch from batch to continuous operation. Pacific Coast planners made the change to render the operation more suitable to automation.

Another production assist will be the use of belt conveyors to move ore from the mine site to processing facilities. Isbell Construction Co. (Reno, Nev.) has the mining contract, is scheduled to open the pit soon.

Commercial research and testing laboratories appear likely to win an important round in their running war on the tax-exempt privileges of the independent nonprofit research institutes and foundations. At least, that's the feeling of interested observers who look for a stiffening of Internal Revenue Service's attitude toward the latter.

American Council of Independent Laboratories (Washington, D.C.), which represents most—but by no means all—commercial labs, has long contended that the "nonprofits" abuse their income-tax immunity—that they do, in fact, compete unfairly with commercial firms in applied research and testing activities. Leaders of nonprofit organizations have been equally persistent in denying this allegation (CW, Jan. 22, p. 49).

The position of the commercial laboratories was bolstered recently by Treasury Secretary Humphrey's request for legislation to permit free inspection of the yearly statements that the "nonprofits" file with Internal Revenue.

Now, the experts are predicting that bureau officials will rule (after studying a vast file of accumulated evidence) that earnings of nonprofit groups are taxable if research results are reported in confidence to a single client.

With approval this week by Food & Drug Administration of the use of Aureomycin (chlortetracycline) in poultry preservation (CW, Technology Newsletter, Nov. 19), American Cyanamid is plunging ahead with plans to get the antibiotic moving in its new job.

The company last week confirmed that it has applied for a trademark

Technology

Newsletter

(Continued)

(Acronize) on food preservation processes utilizing Aureomycin, will license food processors to use the antibiotic. Food so treated will be identified by appropriate labels.

Research underlying the imminent new application was carried out in cooperation with Drohan & Co. (a New York poultry distributor) and the Coatesville, Pa., Producers' Cooperative Exchange.

Oronite Chemical is offering samples of a closely controlled mixture of alkyd-grade benzoic and toluic acids (80-90% benzoic) for use as an oil modifier in resin formulations. A co-product of the company's Richmond, Calif., isophthalic acid plant (due onstream this month), the new offering would sell for about 20¢/lb. on a commercial basis—less than the tab for benzoic.

Oronite is looking for the product to give infant isophthalic a boost. It reasons that a resin formulator who sayes a few pennies on his monobasics will be in better shape to pay the 3¢/lb. premium that isophthalic will command over phthalic.

Meanwhile, another firm with isophthalic plans is getting into the product evaluation stage. Richfield Oil is launching a big sampling program on its own isophthalic, due to be in production late in '56.

The chemical industry lost ground last week in the race to come up with a better (than solder) sealer for tin—or, more accurately, tinless—cans (CW, Oct. 29, p. 34). At the annual convention of the Pennsylvania Canners Assn. at Harrisburg, American Can's Randall Royce reported an aluminum-coated, "entirely tinless" can with welded sideseams.

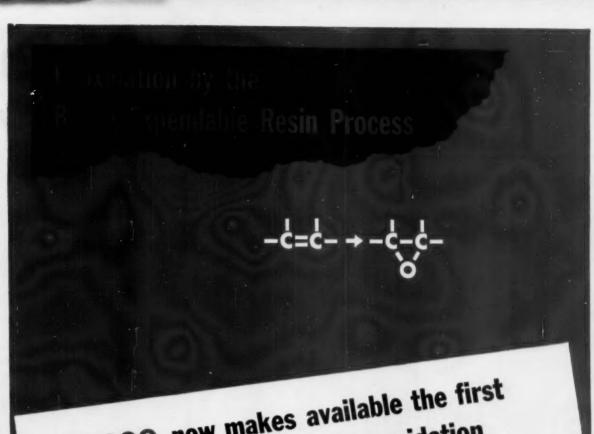
Royce, manager of the firm's Newark, N. J., research laboratories, says the welded sideseams "eliminate the use of tin and lead solder . . . are so strong that under test conditions the steel walls of the cans break before the welded seams separate."

By way of consolation to resin makers—who have long been hopeful that polyamides, polyurethanes or other adhesives could turn the trick—Royce reveals that the insides of the new aluminum-clad cans are lined with special enamel coatings to give added protection to "specific canned products."

Prospects of a more scientific approach to the development of so-called "mental" drugs brightened recently with the findings of researchers Bernard Brodie, Alfred Pletscher and Parkhurst Shore of National Heart Institute, Bethesda, Md., who assert (in Science) that serotonin (5-hydroxytryptamine) has "an important role in brain function."

This means that serotonin—now that it has been shown to act on the brain—comes under strong suspicion as the principal villain in many types of emotional disorders. That's because the compound's production in the body is found to be influenced by the hallucinogenic agent, lysergic acid diethylamide (increased serotonin output), and the tranquilizing drug, reserpine (decreased serotonin).

Now that researchers know the identity of the enemy, they should be better able to synthesize chemicals that will be antagonistic to serotonin in the body.



BECCO now makes available the first practical low-cost in situ Epoxidation process using ion-exchange resins

This broadly practical low-cost epoxidation method uses ion-exchange resins in expendable amounts as catalysts.

The new Becco Process* requires so little resin -2% or less of the combined weight of hydrogen peroxide and acetic acid — that the resin can be discarded after one use.

This is a major improvement over earlier ionexchange processes using large amounts of resin, which had to be used repeatedly to make the process economical.

Conversion efficiency of Becco's new process is very high. Conventional equipment is employed.

Resin cost is low at about one cent per pound of epoxidized end-product when processing unsaturated fatty acid esters.

All the advantages of in situ resin catalysis are now available to manufacturers of resins, plasticizers and stabilizers, pharmaceuticals, insecticides, paints and varnishes, lubricants, organic chemicals and other products.

Becco also has available a semi-fixed resin bed continuous flow epoxidation process.

Full details of the expendable resin and continuous flow process, as well as recent advances in epoxidation and hydroxylation technology, are described in the new Becco Bulletin No. 69, which will be sent on request.

BECCO CHEMICAL DIVISION

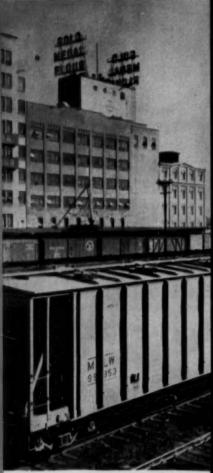
FOOD MACHINERY AND CHEMICAL CORPORATION



STATION B. BUFFALO 7. N.Y.
BUFFALO * BOSTON * CUARLOTTE * CNICAGO
NEW YORK * PHILADELPHIA * VANCOUVER, WASH.



Now you can create alloys for uses like



Special Industrial Finishes, such as the tough enamel lining of this Airslide car for shipping flour, are made possible by new Versamid-epoxy alloys. By blending these resins, you can get hard, tenacious finishes with outstanding resistance to moisture and many solvents, as well as alkaline solutions of up to 50% concentration. For more data on the properties of these alloys. Write for General Mills Technical Bulletin 11-D.



Bubble-Free Pottings and castings can be made with Versamid 125 and epoxy resin alloys. They offer lasting toughness and resistance to water, chemicals and most solvents. This resin alloy features low shrinkage, excellent thermal shock resistance, high physical and dielectric strength and freedom from noxious curing agents. Write for new bulletin.



Low-Cost Tools and Dies like these are now being made from thermosetting blends of Versamid and epoxy resin by Champion Aircraft Corporation, St. Paul, Minn. Versamid-epoxy alloys are hard, tough, impact-resistant—excellent for tools, jigs, fixtures, master molds and like items. With low shrinkage, they conform to the mold, give amber-clear, bubble-free castings, saving time and money for Champion and many other companies.



For more information, send for the new booklet, "Versamids . . . A Demonstration in Resin Versatility."

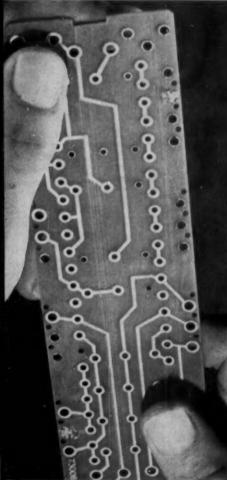
*Investigate Versamids...

the versatile polyamide resins made only by...

exciting new resin * these with Versamids!



Rugged Laminations, such as the plastic boat above, are among the uses for Versamid-epoxy resin alloys. These blends laminate glass fiber cloth, mat or roving. They wet the glass thoroughly, resist delamination. Other possible uses include plastic pipe, radome materials, honeycomb panels and air frame components for aircraft.



Printed Circuit Boses like this are a new use for Versamid 115-epoxy resin blends. Toughness, adhesion, and resistance to corrosion make them ideal for this purpose. Another blend (Versamid 100 and epoxy) bonds electrolytic metals to the bases—with contact pressure only. Formulations appear in Technical Bulletin 11-E.



Load Bearing Adhesives much stronger than most commercial adhesives are made from thermosetting blends of Versamid 115 and epoxy resins. They bond almost any substrate to any other...including wood, steel, aluminum alloys, sheet glass, Plexiglas, Mylar and honeycomb core materials. They show top shock resistance and offer protection against water, grease and oil, chemicals and common solvents. Write for Technical Bulletin 11-F.

CHEMICAL DIVISION of

General Mills

KANKAKEE, ILLINOIS

SPECIALTIES





TWO-WAY PROTECTION: Applied to containers, or to an engine directly, VCI chemicals hold back rust.

A Little Goes Too Far

New slants on volatile corrosion inhibitor applications are pushed to add sales volume to these used-pinch-at-a-time chemicals.

Like Alec Guinness's "Man in the White Suit," who brought the wrath of the textile world about his head because he devised a soilproof, wear-proof fiber, makers of volatile corrosion inhibitor chemicals* have developed a product with sales potential hobbled by its very efficacy. Disappointing as VCI sales seem to be when compared with multimillion-dollar-per-year products, their valuable properties continue to spur extension of their applications.

Only last week, Daubert Chemical
 Co. (Chicago) showed off a new way to utilize its particular type of volatile corrosion inhibitors. Daubert now incorporates its compound, after special formulation, in heat-sealable coatings.
 They can thus be used on automatic packaging machines, to wrap small metal parts. Heretofore, the VCI's have been largely confined to coating paper, which could not be heat sealed.

 Earlier this year, Shell Oil Co. launched a new form of its VPI, compounded to give fast-acting, but also long-lasting effectiveness. Tagged VPI

Other tags for the chemicals are common, too-wapor corrosion inhibitors, volatile rust inhibitors (VRI), VPI is a trademarked name for Shell's type of inhibitors, and is often interpreted to mean vapor phase inhibitor. 250, it is a combination of two previously offered chemicals, VPI 220 and 260—there's 10% 220, a rapidly volatilizing material (diisopropylammonium nitrite) and 90% 260 (dicyclohexyl ammonium nitrite) in the new product.

• Last month, A. D. Little, in Navy-sponsored research, came up with a formed-in-place VCI, made by first distributing cyclohexylamine in the unit to be protected (e.g., an aircraft engine), then adding dry ice, and sealing the engine (CW, Oct. 29, p. 94). This process is not yet through its test phases, and is not commercially available.

Over-the-Counter: Despite these new developments, it seems plain that VCI chemicals will continue to be industrial chemicals with retail-store sales volume. An order for 25 lbs. of the pure VCI crystals is never sneered at—it will likely go a long way for the manufacturer of large steel equipment.

And so far, there have not been any giant contributions to sales volume made by specialties firms. Half a dozen or so firms offer Shell's VPI in small, hardware-store-size containers, including at least one such compound

(for industrial and home use) in an aerosol form (R. J. Kerr Chemicals, Inc., Chicago). Other individual-use products include those of Genessee Mfg, Co. (Rochester, N. Y.); Alcon Co. (New Orleans); Castle Sporting Goods, Inc., (Ruscoban, Yonkers, N. Y.). Again here's a case where the products last a long time, even where purchaser has a completely outfitted home workshop, or is a hunter with anything less than an arsenal of guns.

Paper Profits: Probably the largest single consumer of VCI chemicals are the paper companies. And in one case at least, they don't even buy these chemicals directly from the VCI patent holder (Shell). For example, starting with a chemical like dicyclohexylamine, they produce their own nitrite, coat it directly on the paper. The patent holder collects only royalties on the paper, not profit on chemical sales.

Most of this paper goes for protective packaging of machine parts—engine piston rods, bearings, etc., in fiber boxes with treated VCI inserts. Similar packages, designed for consumer use, have been marketed.

Add it all up, and the dollar value of VCI chemicals is likely not much over \$5 million, with perhaps 5-7% of this for the pure, crystalline product. Poundwise, the amount is even smaller, since these chemicals sell for about \$3-5/lb.

Successful Suppression: Basically,

the chemicals used to suppress corrosion are similar. Shell uses complex amine nitrites. Daubert favors sodium and inorganic nitrites and amides. The A. D. Little compounds are carbamates, formed when the carbon dioxide reacts with the amine.

Ferrous metal protection is the basic objective of the chemicals. Most appear to have a moderately valuable effect on aluminum and magnesium, too, though for obvious reasons, care of ferrous metals is industry's greatest problem. The inhibitors, after their protective job is done, don't have to be painstakingly removed. When applied to engines (see cut), the unit can be put back into operation by simply refueling and relubricating.

The inhibitors also find some application to hydraulic fluids, and in watersoluble paints, where these contact metal surfaces.

With all their uses, the VCI chemicals aren't cure-alls, have some drawbacks. They're of no value for preventing silver tarnish—and there is a clear-cut need for such an inhibitor that could be used handily. And where in-service engines are put into storage, another problem has cropped up: The bromine compound used with leaded gas sometimes forms hydrobromic acid with the inhibitors. But Shell, for one, may soon have this problem licked

New Home for Syndet

The long-expected sale of Chat, the liquid synthetic detergent made by Antara for automatic dishwashers, has finally materialized. Prespac, Inc. (New York) has just acquired it.

Sale price of Chat hasn't been disclosed, but it is definitely placed considerably below the \$1-million price on Chat's companion liquid syndet, Glim (for hand dishwashing), which was sold to B. T. Babbitt.

Prespac, perhaps best known as a producer of aerosols, now has Fluid Chemical (Newark) packing Chat in 22-oz. Canco units. Until now, Prespac had no household syndets under its own name.

Chat will therefore be its first "name" product, will be distributed nationally. Chat is now sold largely in limited metropolitan areas through appliance dealers, but Prespac envisions supermarket distribution.

Cloths for the Chores

If you've got to put the chemical specialty on cloth to use it, you might just as well start with a pretreated cloth—that's the basic philosophy behind Viking-Sloane Corp.'s (New York) broad program to sell its new line of "miracle" cloths.

Introduced as a series last February, the novel specialty cloths (and mitts) have surged along, pushed by an advertising campaign that will demand over half a million dollars in '55, and is slated to take double that ad outlay next year.

Next year, too, the current line of nine specialties* will be joined by at least three others, the first of which is promised to be a copper pan cleaning mitt.

Family Resemblance: First of the miracle cloths was Glasskleer (CW, March 19, p. 106), introduced several years ago. Glasskleer tested several phases of operation for V-S: The market for an antifogging compound among homeowners and motorists; the possibilities of repeat sales in an item of this nature; the sales appeal as well as the effectiveness of special-ty-treated cloths.

Glasskleer, like all the other products in the series, was broken in strictly as a mail-order product—cloths were plugged in newspaper, radio and TV ads across the nation. From mail order, the cloths graduated to the V-S consumer catalog. Only after they proved highly salable were they placed in stores. Within weeks after Glasskleer was introduced to retail stores, the other products (which had been similarly market-tested) joined it, displayed in a specially designed rack (see cut).

All are wrapped in 5"x8" polyethylene heat-sealed packages; all sell for \$1. Some also come in \$2 sizes (Window-Kleen, Rust-Ban, Doggy Bath, Glosskwick), and others are to be offered in the large size soon.

Man of the Cloth: Maybe it is overstating the case to say selling's his religion, but Viking-Sloane's President Gene Griffin is far more interested in selling the cloths than in making them.

* Glasskleer, Rust-Ban, Doggie Dry-Bath, Silver-Kleen Mitt, Shoe Mitt (neutral polish, works with black and brown), Glosskwick (dusting cloth): Speedkleen (dry car-wash and shine), Window-Gleem (glass cleaner, not antilogger), Pressteam (pressing cloth).

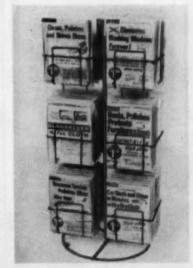
Although V-S must turn out a few items itself now (in L. I. City and Yonkers, N. Y.), it would prefer to get out of the manufacturing phase as soon as possible. It is, however, actively looking for new chemical specialties (not just cloths) to sell. The firm already has a couple of floor products in the development stage, hopes to be test-marketing them via mail order within a few months.

It's Griffin's view (he started with an advertising agency) that it takes plenty of advertising to sell a specialty. Because many firms he dealt with, as an agencyman, wouldn't put out the money he deemed necessary, he decided to sell mail-order items through his own firm, and his success so far proves his point.

Chemical specialties were not his first lines—but they're an area he feels has plenty of potential. Nor are treated cloths by any manner or means new items† Kozak car-wash cloth is a familiar product, as are the Cadie Cloths (Cadie Chemical Products, Inc., New York), which come in several types.

But there's one big difference in the V-S products,—nearly all of them sell at twice the price of competitive items. And that's enough to justify a \$1-million/year advertising budget.

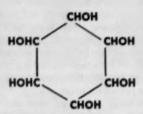
† To most World War II servicemen, the Blitz Cloth is the most common example.



DISPLAY CAROUSEL: A handy store rack, but it may be outgrown.

Products from Corn and Soybeans

... for
Chemical Synthesis
and
Lipotropic Preparations



INOSITOL

A recognized member of the B-Complex vitamin group, Inositol has several applications in the pharmaceutical industry. It is used either alone or with certain vitamins, as a lipotropic agent. The six hydroxyl groups in the molecule lend themselves to esterification and ether formation. And Inositol is also used in chemical synthesis. It is a product that holds great promise, not only for medicine, but for many fields of industry.

You can depend on Staley, one of the leading corn processors and chemical manufacturers, to supply your needs for a high grade, pure Inositol compound. At your request, Staley will be glad to send complete data, or to meet with you to discuss your Inositol requirements.

For information about other quality Staley pharmaceutical products; Corn Steep Liquor, Corn Syrups, Amino Acids, Starches, Lecithin, etc., write:

MFG. CO.



Fountain Shiner

A new package and a new liquid shoe polish come together in Ezy-Shine, product of Nuway Products Corp. (Newark, N.J.). Containing lanolin and silicone, the polish leaves no unpleasant odors, is water repellent, and nontoxic.

Containing Ezy-Shine is a 2-oz. bottle ("suitable for carrying in brief case or purse") with a soft sponge rubber tip with which the polish is applied. Freedom from danger of spilling is the big promotion point.

Eleven colors are available (white, black, neutral, oxblood, brown, tan, red, green, baby-blue, navy-blue and pink), and a special department has been set up for custom color-matching. Clean Standards: Performance standards for cleaning and maintenance materials are the goal of a project being launched by the American Standards Assn. (New York). The association will lead the work of a group of manufacturers of materials, manufacturers of products on which cleaning is done, government and health agencies, consumers groups and trade associations. Cleaning product manufacturers will be free to advertise that their products meet or exceed the standards.

Take It Off: A 2 to 50% solution (organic solvent) of an ethylene oxide condensation product of an aliphatic guanidinium N-aliphatic carbamate will work as a paint remover,



N.Y. HERALD TRIBUNE-NAT PEL

Pique Against Pigeons

PIGEON REPELLENT makers (CW, July 23, p. 58) might note this new market opportunity, as suggested by playwright ("The Solid Gold Cadillac") Howard Teichman in a letter to a friend: "... When I was in Chicago, you introduced me to a bird control man. We need him desperately. They're tearing down the Third

Ave. 'El' here in New York. The pigeons no longer have a place to roost or do anything else. Result: New Yorkers are now collecting, when they traverse Third Ave., hatfuls of what the South Pacific natives call 'guano.' Where is your bird man?" Public-relations-minded Third Ave. shopkeepers should be ripe for a sales pitch.

Union's red rayon
looper thread
gives our customers
faster, easier
bag opening...
...at no upcharge
to us

So that your customers can open your Multiwalls more easily, Union now offers rayon-sewed bags with a red colored looper thread—without a premium.

When Union Sewn Multiwalls are closed with a white rayon thread for the needle, red is used for the looper thread. Even if a bag becomes discolored in transit or storage, your customer need only cut the thread back two stitches and the red looper becomes visible for unravelling and easy opening.

Union Bag is the first Multiwall Manufacturer to provide this added service without extra charge.





HEMICALS

As basic producers of Copper, Iron, Zinc and Sulfur, we maintain exacting

quality control from the raw material to the finished product. You can be assured of

UNIFORM QUALITY if it bears the TC label.



SPECIALTIES . . .

according to Emil Vitalis, of Springdale, Conn. The product is covered in U.S. Pat. 2,721,848.

Ladderless: Stocking runs, or ladders, can be halted by a specialty product worked out by Evans Chemicals, Ltd. (England). The product (British Pat. 736,974) is a dispersion of 4-10% by weight of high-viscosity polyvinyl alcohol, water and a solvent.

Plant Elixir: Drug Houses of Australia Ltd. has come up with a new use for hexachlorophene. The group suggests small percentages of the chemical in water to prolong the life of cut flowers (British Pat. 737,157).

Cleaner Dishes: For nonspotting cleaning of dishes, Albright & Wilson Ltd. has patented (British Pat. 737,299) a new dishwashing compound. The product is composed of 20-80 parts by weight of sodium tripolyphosphate mixed with 20-80 parts hydrated chlorinated trisodium phosphate.

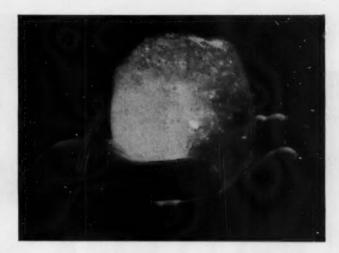
Number Five: Its fifth new plant to be under construction for a '56 opening has been started by National Gypsum Co. (Buffalo, N.Y.). This one, a \$500,000, 100,000 sq. ft. 2-story structure, will produce cold-water paints in Raritan, N.J. (Gypsum's ninth paint plant).

Pile Out: An aerosol product for removing spots from synthetic pile fabrics is being sold by Kandu Chemicals (New York) under the name Spot-Out. At \$1.95 retail, the home cleaner is pushed as a substitute for sending the garment to fur cleaners.

Conducting Mastic: A switch in the mastic field—Charles Wright and Warren Hanson have devised a mastic that conducts heat rather than insulates against it. As described in U.S. Pat. 2,717,839, the mastic is mainly magnesium oxide and oil.

Wire Barer: A new stripper for insulated wire is offered by Chemclean Products Corp. (Brooklyn, N.Y.). Numbered Chemclean No. 493, the product will loosen the bond between insulation and wire, is promoted as good for taking off Formex, Formvar, Isonel, baked-enamel coatings, and various other organic finishes.

THIS LUMP OF WATER CAN BE SLICED WITH A KNIFE



Here is a significant property of Hercules® purified CMC (cellulose gum) that should prove useful in many fields where a gel structure that is thermally stable and free from stickiness is required.



The reaction of CMC with a multivalent metallic ion provides a unique way of gelling water with low concentrations of CMC. A combination of 2% CMC with 0.15% aluminum sulphate in water yields a firm gel structure free from stickiness, which remains stable throughout freeze-thaw cycling to temperatures approaching 200°F.

CMC's versatility as a film-former, thicken-

ing agent, and suspending agent has made it an important and economical ingredient in a variety of consumer and industrial uses. Write for testing samples, indicating your proposed use, so proper type can be sent.

Virginia Cellulose Department

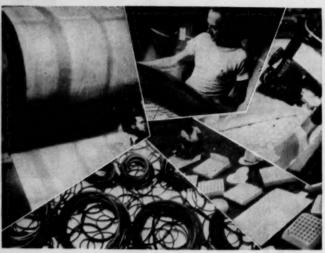
HERCULES POWDER COMPANY

992 Market Street, Wilmington 99, Del.





TIRES: Still a big rubber outlet, but . . .



NONTIRE USES now take a bigger share of available supplies.

Plenty of Rubber

In 1955, dollar sales of nontire rubber products will again exceed those of tires. And the trend, if it continues, will likely have the nontire rubber industries doing two thirds of the country's rubber products business within 10 years. That's a reversal of the prewar position, when tires were dominant, accounted for some 60% of the market.

The switch was noted by Hewitt-Robins President Thomas Robins, Jr., in a panel discussion before some 200 U.S. rubber makers gathered in New York's Park Lang Hotel. Occasion: the 40th annual meeting of the Rubber Manufacturers Assn.

Government figures were cited by Robins to show the tempo of growth of the nontire segment of the rubber industry:

Tire sales, he said, increased from \$522 million in 1939 to over \$1.9 billion in '53, or about 264%. Meanwhile nontire products grew from a near \$356 million to almost \$2 billion, or 450%.

Nontire items (such as foam rubber, conveyor belting, floor tile, athletic equipment, footwear (see cut) have outpaced tires in sales growth over the past 15 years, with the result that the tire proportion is now down to about 48% of the industry total.

Foreseeable growth, he added, will require U.S. manufacturers to use

more synthetic rubber and other elastomeric materials.

Enough in View: Will there be enough synthetic rubber available? Apparently so, opines L. E. Spencer, assistant to the president of Goodyear Tire & Rubber. In light of upcoming expansions in capacity and production, Spencer says that he is compelled to view the "future supply position of synthetic rubber with the greatest of optimisim."

Even though the record production of the industry since it passed into private hands last spring has not made it possible to avert tight supply situations entirely, he predicts that synthetic rubber inventories would be built to a 2½ to 3 months' supply at the earliest opportunity.

Capacity of GR-S rubber is expected to increase from the government-rated figure—including the Institute, W. Va., plant—of 856,000 long tons early this year to more than 1.1 million by the end of '56. By 1960, capacity will probably progress to a 1.25-million-tons/year level.

Other types of special-purpose synthetics are slated to increase, too. Thus, by '60, the U.S. will have an over-all capacity of synthetic rubber materials in excess of 1.5 million 1. t./year. Spencer also points out that Canada, England, Germany, France, Italy, Japan, and perhaps Brazil and

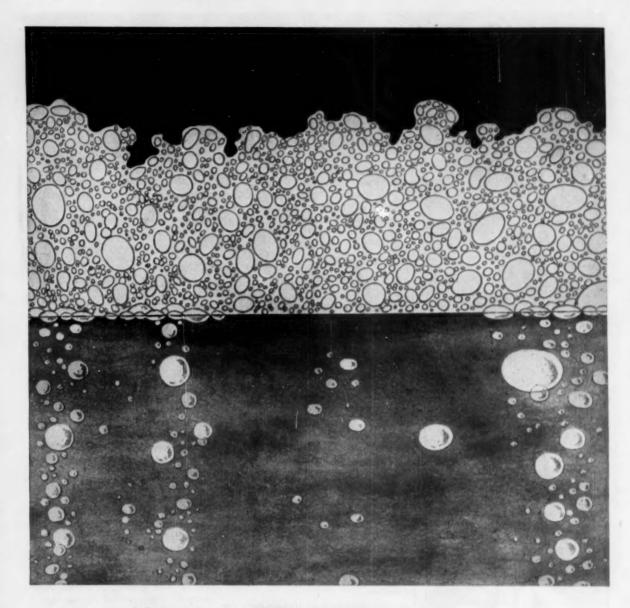
South Africa, contemplate expanded or new facilities by that time.

"Viewing the world as a whole," he continues, "synthetic rubber production in '55 will be equivalent to 37% of consumption. For the U.S. alone, the comparable figure is 64%. By 1960, world capacity of synthetic rubber is expected to be equivalent to 53% of consumption, while for the U.S. alone, the comparable figure is 95%."

The potential supply/demand of world rubber for the next four years was discussed by G. O. Trenchard, manager, economics department, Firestone Tire & Rubber. The current very tight supply-demand situation, he averred, is scheduled to give way to an abundance, or perhaps "surplus," of rubber in the next year or two. World rubber demand in '57, for instance, will likely be slightly over 3.1 million 1. t., with supply totaling about 3.4 million. Breakdown of the latter figure: 1.5 million 1. t. of synthetic rubber; 1.9 million natural.

By 1959, natural supply is expected to be still pegged at 1.9 million tons, with synthetic increasing to 1.75 million. World total demand by then (3.37 million tons) is forecast to fall short of supply, 3.65 million.

J. Ward Keener, vice-president of B. F. Goodrich, told the group that vastly greater world consumption of synthetic over the next few years "can stop once and for all the roller-coaster rides the crude rubber speculators



How to build a better foam cap

An even layer of foam or "cap" is desirable on some acid baths to prevent fumes from escaping and impurities from entering. Making this foam requires a highly specialized type of surface active agent, and Du Pont has a line of acid-stable agents that assure the right consistency and amount.

Other Du Pont surface active agents are equally useful in building foam for flotation processes and even for the manufacture of acoustical tile—where uniformity of cell structure is particularly important. Still others are used as wetting agents, grease dispersents, oil emulsifiers, mold lubricants and as basic ingredients of antistatic solutions.

In all, there are over 50 Du Pont surface active agents, including anionic, cationic, nonionic and amphoteric types. Each is carefully controlled during manufacture to assure uniformity and reproducible results in the field. Many industries are profiting with Du Pont surface active agents. Can these specialty chemicals help you?

WRITE US ON COMPANY LETTERHEAD and describe your problem to us. We'll do our best to suggest the surface active agent that can help you, and we'll be only too glad to give you the benefit of our experience. Address: E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Wilmington 98, Delaware.



BETTER THINGS FOR BETTER LIVING

DU PONT SURFACE ACTIVE AGENTS



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have been taking us on" since the industry began.

While manufacturers outside the U.S. and Canada consume nearly half the world's rubber, they now use only 8% man-made rubber. "Currently," he said, "that's all they can get, although the U.S. and Canada are exporting synthetic rubber at the rate of 15,000 l. t./month."

In summarizing the panel discussions, W. J. Sears, association vicepresident and moderator, stressed the importance of the planned expansions in synthetic capacity in bringing price stability into the industry's main raw materials. The supply of these manmade rubbers, he added, will be ample for all domestic requirements, will permit greater exports, and will be marketed at stable prices.

Speaking on "Natural Rubber Supply 1955-1960," W. E. Cake, vice-president of U.S. Rubber, reviewed the output potential of natural rubber producing countries of the world.

RMA President Ross Ormsby, in a forecast on synthetic rubber, put use by '56 at near two-thirds of U.S. new rubber requirements.

Mental Market: Large but Limited

Mental drugs—now known by the less disquieting label of "tranquilizing agents"—are being described as the public's tension-aspirins of tomorrow. Soon, it's said, harassed and nervous John Q. supposedly may down a "tranquil-pill" with his morning coffee and, for the rest of the day, face the madding crowd with unshakable calm.

Utopian as these reports may sound, they do not originate from manufacturers of mental drugs, although such a market would undoubtedly skyrocket sales curves. Still smarting from adverse publicity during the early days of mental drug therapy, producers are unwilling to engage in overoptimistic speculation, maintain that such items are for prescription use only.

But even without the sales impact of a packaged nonprescription product, these drugs are finding a substantial market.

Manufacturers of tranquilizers are reticent about discussing production and sales figures, of course, but one generally accepted estimate of today's market places the combined sales of all *Rauwolfia* products, together with chlorpromazine, Miltown, and Equanil, at \$60-65 million annually.

An estimated 20-33% of the 700,-000 mental patients in this country would benefit from the use of tranquilizers. Ten percent, perhaps less, are now receiving the drugs—mostly chlorpromazine and reserpine.

These estimates suggest a possible doubling of the market in the future, but the inherent complexities of the business preclude accurate forecasts.

Smith, Kline & French, however, report a tripling of their drug output

since the introduction of Thorazine (chlorpromazine); most of this growth is attributed to the tranquilizing agent. Raw material consumption by the firm has increased 350% in the same period.

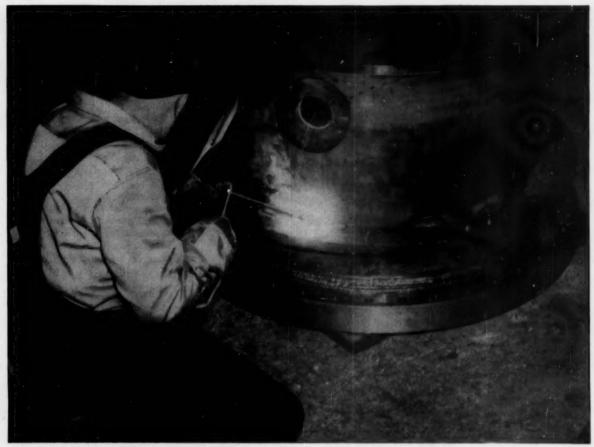
Synthetic tranquilizers are heavy consumers of chemicals. SKF, for example, needs at least 13 different raw materials for the manufacture of chlorpromazine. Used in large amounts are o-chlorobenzoic acid; m-chloraniline; n-amyl alcohol; dimethylamine; trimethylene chlorobromide; benzene; trimethylene chlorobromide; benzene; tsopropyl alcohol. Other chemicals consumed include caustic soda, sulfur, sodamide, toluene, muriatic acid, magnesium sulfate.

A newer synthetic mental drug, meprobamate (Wallace's Miltown and Wyeth's Equanil) uses propionaldehyde, formaldehyde, phosgene and ammonia. The product is 2-methyl-2-n-propyl-1,3-propanediol dicarbamate.

A third synthetic, not yet on the market, is Merrell's Frenquel, usually classed as a tranquilizing agent. The firm considers this inaccurate, prefers to call the drug an "anticonfusion agent." Chemicals used in its manufacture are not revealed, can only be surmised from its generic name azacyclonol hydrochloride and from its scientific name a-(4-piperidyl) benzhydrol hydrochloride.

Reserpine, extracted from the Rauwolfia root, is sold by several firms: Ciba (Serpasil); Penick; Pfizer; Riker (Serpiloid and Rauwiloid); and Squibb (Rau-sed and Raudixin).

Extraction methods are used to separate reserpine from the root, and a number of chemicals are used in the process; but each producer has devel-



Welding 90:10 Cupro-Nickel Head to filter shell of the same material by metallic arc process with 70:30 cupro-nickel electrodes. Iron modified 90:10 cupro-nickel can also be

cold or hot worked, soldered and polished. Containing only 10% nickel, it is more economical yet just as satisfactory as richer alloys in scores of applications.

A new answer to corrosion and erosion ... iron modified 90:10 cupro-nickel alloy

APPLICATION PERFORMANCE now verifies experimental data showing both the reliability and economy of iron modified 90:10 cupro-nickel alloys.

At a lower cost than richer alloys, the relatively new 90:10 cupro-nickel alloys provide better thermal-conductivity and high resistance to corrosion and other forms of attack... particularly to attack from salt or brackish water, such as that encountered by steam plant or vessel heat exchangers, piping systems and condenser tubes.

In addition, the 90:10 cupro-nickel fends off marine fouling organisms and proves advantageous for hull sheathing.

Coming into increased use, because of its high resistance to corrosion and erosion, iron modified 90:10 cupro-nickel is now available from Revere Copper and Brass Incorporated, New York 17, N. Y., in the form of sheet and plate, pipe and tubing.

Whatever your industry, if you have a metal problem, send us details for our suggestions on ways to increase your result/dollar ratio.

Write for . . . List A of available publications. It includes a simple form that makes it easy for you to outline practically any problem for study.



Navy Selected 90:10 Cupro-Nickel for all metal parts in this filter designed to remove every trace of water from aviation gasoline. Heads and shell are of Revere 90:10 cupro-nickel, 1\%" thick. Because of this thickness, heads were formed hot at around 1690°F.



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MARKETS . .

oped his own technique, is hesitant about identifying the solvents he employs. In addition to solvents, chemicals such as caustic soda, methanol, acetic acid, and ammonia are used to some extent.

In the future, mental drug manufacture will obviously consume increasing amounts of chemical raw materials, since medical authorities continue to report favorably on the drugs, and institutional consumption is increasing.

But use of today's tranquilizers by the general public is another thing. Speculations about a universal panacea have naturally followed reports that some of the drugs are relatively free of toxic effects. In fact, Riker's Edlin (called Rauwiloid in the U.S.) is now advertised on the radio and sold freely over-the-counter in Japan.

It is doubtful, however, that the Food & Drug Administration would condone such free use in this country. But more significant right now is the fact that most manufacturers turn thumbs down on nonprescription sale of their mental drugs, emphasize that the elixir-seeking segment of the public must look elsewhere for relief from the tensions of fast-paced living.

Round of Reductions

By this week, it's unanimous-and another trade prediction is fulfilled. Du Pont is cutting prices on its synthetic fibers. The move, which reverses an earlier decision to hold the price line despite reductions on competitive fibers (CW, Nov. 12, p. 98), brings Du Pont's nylon, Dacron and Orlon down to lower levels effective immediately.

The reductions range from 20-30¢/ lb., and involve only staple and tow tags. No revisions, says the company, are planned in filament prices.

Typical cuts announced are: nylon, to \$1.30/lb. from a previous \$1.55; Dacron, reduced from \$1.60 down to \$1.40/lb.; and Orlon acrylic fiber. from \$1.60 to 1.30/lb.

The Orlon change doesn't surprise some fiber users, who believe that the price was too far out of line with Chemstrand's Acrilan and Union Carbide's dynel. (Carbide, too, was reluctant to follow Chemstrand's suit, but held back only 48 hours.)

Du Pont's action now completes the price-change circle.

...AMONG SOME 3500 ORGANICS

That "dec." would probably set in a long summer's day below 148 C if it were an ordinary salt, like a hydrochloride. The fancy new-fangled fluoborate prop holds it together, just as the customer who asked for this item reassured us it would. It is nice to have reassuring customers.

For paper chromatography, where this compound serves as a color indicator for phenols, the MP hardly matters. All the chromatographers want of it is the p-nitrobenzenediazonium ion to form characteristically colored red, blue, or lavender azo dyes with various methylolphenols (C₄H_nOH(CH₂OH)_{1-n}).

To get at other phenols, one makes such derivatives out of them. The clever chap who thought this up was only studying the phenol-formaldehyde resin formation reaction, and here, willy-nilly, it looks as though he has opened up paper chromatography for phenol analysis.

Somebody is always opening up new fields for paper chromatography, a technique of which the main fault seems to be that it is so simple it doesn't help build up a lab's budget very fast. If this doesn't bother you and if you are not too proud at this late date to read through a brief, nononsense introduction to paper chromatography, we can send you the October issue of our Organic Chemical Bulletin, which is devoted to the subject. This will put you on the mailing list for that publication, in which our working chemists write review articles for the benefit of the archives and fellow tribesmen. If the absence of clever copywriting and fancy layout from that 28-year-old little periodical should prove in time to bore you, you can always arrange to have your free subscription cancelled.

P 2896	o-Phenylphenol Sodium Salt (Pract.)	g1	1.80	3 kg.	 7.90
1776	8-Quinolinol Sulfate	g	1.25	100 g.	 3.40
	(HOC ₆ H ₂ N:CHCH:CH) ₂ ·H ₂ SO ₄ MW 388.39				

Medicine for people we don't sell, nor medicine for animals. **Medicine for orchids**, yes—the two aromatic salts above. Only this past spring did we learn that we had it to sell. Letters began to drift in asking for descriptive literature on our orchid remedies. What could we answer? Of course we had no such literature, but could we deny that among our 3500-odd items there might be something to cure an ailing orchid?

(People are always assuming that because we sell a chemical we know all about its sundry uses and have hungry salesmen panting for an opening to demonstrate them all. This is a perfectly natural assumption that happens to be false. Unlike the entrepreneur who sells the sizzle instead of the steak, we sell chemicals rather than the benefits they

confer. But we do love to sell the chemicals.)

What we did was to track down the plant pathologist who had found these two particular compounds to be capable of making a fine distinction between the metabolic systems of orchids and those of certain bacteria and fungi that infest them. (Use in 1:2000 dilution by spray or immersion for 60 minutes or longer.) We checked with him on the identity of the compounds and then hung out our shingle as horticultural apothecaries with a limited line.

If any man thinks he can make a living by putting these compounds up under his own trade-mark and backing it with more helpful service to orchid growers than ours, more power to him and we hope he lets us quote on supplying the chemicals.

5247	Gelatin (Purified, Pigskin)	 500 g \$22.05
1099	Gelatin (Purified, Calfskin)	 500 g 22.05

For photographic film and paper, we make and use a prodigious volume of gelatin; for that purpose it must be prepared even more carefully than for a journey through the alimentary canal. These are purer still, having extremely low ash. When a laboratory needs a little of this **superior consommé** for some fussy purpose, such as the new technique for mounting microtome sections from undecalcified,

plasticized bones to be autoradiographed (Stain Technology, 29, 225, where we are mistakenly called "Eastman Chemical Corporation"), we sell one of the above-designated Eastman Organic Chemicals. We don't bother our shy but commercially minded sister, Eastman Gelatine Corporation, of Peabody, Mass.

Prices quoted are subject to change without notice.

We single out these five organics because they're interesting, not because we're looking for a big rush on them. Also to call attention to the fact that we have some 3500 other Eastman Organic Chemicals in stock. Our List No. 39 and its recently issued supplement are yours for a note to Distillation Products Industries, Eastman Organic Chemicals Department, Rochester 3, N. Y.



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Market

Newsletter

CHEMICAL WEEK
DECEMBER 3, 1955

It was a fairly safe prediction that all ethyl alcohol buyers would be paying 2¢/gal. more for their needs come the first of the year. In rapid-fire order, following U.S. Industrial Chemicals' lead last week (CW Market Newsletter, Nov. 26), just about all other makers (including Publicker, Shell, Carbide, Commercial Solvents) announced higher upcoming alcohol schedules.

Indicative of the uptilting trend of ethyl use—reportedly a firm prop for the price rise to 42¢/gal. (pure, tanks)—are these comparative production figures just released by the Alcohol and Tobacco Division of the Internal Revenue Service: for September this year, slightly more than 40.9 million (proof) gal.; same month in '54, about 30.6 million.

Heading in the other direction—downward—are prices on titanium sponge metal. In what trade followers believe is a "it's-my-turn-now" move, Titanium Metals announced that it would clip another 30¢/lb. off its \$3.75/lb. sponge price. Almost immediately, the other big-time commercial producer, Du Pont, was telling its customers the competition would be met.

About three weeks ago, it was Du Pont who first posted a 20¢/lb. reduction on top-grade sponge, and Titanium Metals emulated the reduction a couple of days later.

Business must be good, however. The latter firm notes that its bookings in October were the largest in the company's history. And earlier Du Pont had predicted that a "broadening of commercial markets" would have a price-reducing effect.

For the second time in less than two months (CW Market Newsletter, Oct. 15), the "tranquilizing agent" reserpine will be offered for less. Behind the latest \$1/gram slash: greater availability of imported raw material Rauwolfia serpentina.

New reserpine prices to be posted generally: in 500-gram-or-more lots, \$8.50/gram; for lesser quantities, an even \$9/gram.

Mental drug markets are big and getting bigger. (For the story on the sales surge, see p. 82.)

What's the outlook on naval stores? U. S. Dept. of Agriculture prognosticators in a just-out "1956 Outlook Issue" of the "Demand and Price Situation" have one answer. Prices for rosin and turpentine are expected to remain stable through this quarter and well into next year. There could be a slight rise, though, if export demands for U.S. material increase.

Look for smaller supplies of rosin in the new crop year (beginning April 1), but production then, opines USDA, probably will be higher than the 2,290,000 drums expected this year.

Supply of turpentine will be little changed in '56, with lower stocks offsetting increased output of gum and sulfate wood turp.

The fats and oils situation was also scanned by the government's marketing experts. Production of tallow and greases in 1955-56, for example, may be somewhat slightly higher than last year's 2,825 million lbs., although stocks aren't slated to change much. Reason: consumption will likely be great enough to take up the difference.

Exports of tallow, soybeans, soybean oil, and some other farm commodities are expected to continue at a good rate, chiefly because of swelling U.S. supplies plus "attractive" prices. Total quantity shipped out, though, may

Market Newsletter

(Continued)

be slightly below last year's when large CCC liquidations of cottonseed and linseed oil gave a boost to the export total.

Synthetic fibers, continue to jostle King Cotton's crown. Latest USDA survey on the cotton situation reveals that consumption of man-made fibers this year will be up about 23% (350 million lbs. above '54's 1,497 million), while gain for the natural product will amount to only 6%.

Mearly all types of synthetics show a use-increase—acetate staple is the only one apparently losing ground. Partial rundown of the estimated gains: rayon staple fiber, 35%; high-tenacity rayon, 25%.

And, avers the agency, the noncellulosics may be more competitive with cotton than has been generally believed. Reason: despite the higher pound-for-pound price tags on the man-mades, it takes less than one pound of most of them to replace two pounds of cotton yarn—and there's a great deal less spinning waste in using the noncellulosic fibers.

Speaking of synthetic prices, Industrial Rayon customers, too, will be able to buy nylon staple fiber for $20-30\phi/lb$, less than they've been paying. The move comes on the heels of Du Pont's posting of lower synthetic fiber prices (see p. 94).

Industrial's nylon staple, previously sold at a single price of \$1.50/lb., will now be multischeduled: 1.5 denier, \$1.30/lb.; 2, 3, and 6 denier, \$1.25; 8 and 15 denier, \$1.20/lb.

Users of organic colors will face higher prices next month. Some major makers, including Sherwin-Williams and American Cyanamid, have already informed their customers of the advances. Others will likely follow soon, since most claim that rising costs of certain intermediates, dyestuffs and other raw materials have shaved profit margins too thin.

Typical advances: Graphic Reds (M & R shades), 5¢/lb. to a new 90¢/lb. level; Dry Alkali Blue, up 10¢/lb. to \$2.20; Permanent Orange, 10¢/lb. to the 1956 price of \$1.30.

Altered, too, but on an immediate spot basis, are prices on some important natural waxes. On the upside: carnauba; continuing a downward trend: ouricury. Strong consumer demand has pinched available supply of the former, pressured prices 1-2¢/lb. higher on some grades.

In contrast, calls for ouricury continue to weaken and have again (CW Market Newsletter, Oct. 29) depressed quotations. Latest cut—2¢/lb.—brings the pure refined material down to an 80-82¢/lb. range; technical to 75-77¢, depending on quantity

SELECTED CHEMICAL MARKET PRICE CHANGES Week Ending November 28, 1955

DOWN	Change	New Price
Cottonseed oil, credo, tks., Southeast		\$ 0.11
Ouricury wax, refd., pure, bgs. Reserpine, cryst., bots., gram		9.00
Tankago, gnimal, feed, 9-11% ammonio, bulk, Chicago, unit-ton Titanium, metal, sponge	0.25	4.75 3.45

All prices per pound unless quantity is stated.



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Suppose you need to emulsify oil in water. For the particular oil you are using, a definite HLB value is required of the emulsifier. That is, the oil demands a specific water-attracting "pull" to be applied to it in order to accomplish the desired dispersion in water.

To provide emulsifiers with differing affinities for water, Atlas adjusts the proportion of hydrophilic groups, such as hydroxyl and oxyethylene (ETO) groups. The more of these the emulsifier has, the greater is its "grip" on or affinity for water . . . and the greater is its ability to hold oil.



Oil-soluble emulsifiers possess varying degrees of affinity for oil depending on the number and size of lipophilic hydrocarbon groups, such as may be derived from faity acids.



Water-soluble emulsifiers are made in varying attraction for water by adding hydrophilic ethylene oxide chains.

"Oil-Loving" Emulsifiers

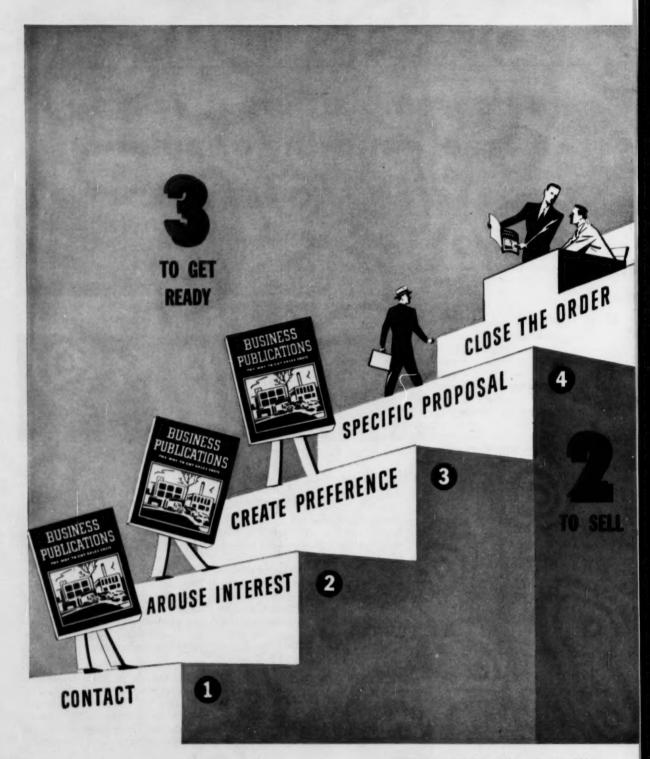
Similarly, if you are interested in water-in-oil emulsification, you need an emulsifier with a definite amount of attraction for oil. To produce such materials, Atlas builds emulsifiers with varying length of lipophilic component. The oil-loving part of these emulsifiers is a long chain fatty acid radical or a fatty alcohol. And the longer these chains get, the more lipophilic the emulsifier becomes . . . and the greater its ability (in general) to hold water. Thus, an emulsifier derived from oleic acid, which has 18 carbon atoms in its chain, has more oil-solubility and better water-holding power than one made from lauric acid, which has 12 carbon atoms.

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To give further flexibility to the formulator, Atlas emulsifiers can be blended together . . . producing an almost endless variety of oil and water attraction. These emulsifiers blend readily, because they belong to closely related chemical families and do not inter-react or interfere with one another. Instead, they supplement each other, joining forces to provide improved composite action.

If you'd like further information about the use of Atlas emulsifiers, write for a copy of "A Guide to Formulation of Industrial Emulsions with Atlas Surfactants." This booklet contains more than 60 typical formulas utilizing Atlas Products.

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Selling is an old profession with new problems. The basic steps to a sale are the same. The salesman must still contact the prospect, arouse his interest, create preference for his product . . . before making the proposal and closing the sale.

But there are new angles. Because modern industry is more complex and more decentralized, the salesman must contact more people and travel more miles per sale. Add to these facts the problem of selling in a highly competitive market, and it becomes obvious that the salesman needs help.

The best help you can give your sales force is consistent and adequate advertising in business publications. Such advertising MECHANIZES the first three steps in the manufacture of a sale. It makes contact with known and unknown buying influences at pennies per call... enables the salesman to use his selling talents on the important pay-off steps of the sale... keeps his customers sold between calls.

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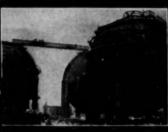
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PRODUCTION .

- 1. Finely ground (60-80 mesh) polyethylene is blended with metals.
- 2. The mixture of metal and plastic is placed in a plastic container, filling it about 3/4 full.
- 3. The contents of the container are agitated mechanically, causing the heavy sandlike material to take on the appearance of a boiling liquid. It behaves, in fact, like a fluid-bed catalyst.
- 4. The object to be coated (metal or glass), cleaned and preheated to 400 F is placed in the bubbling "bath" of polyethylene for 30 seconds.
- 5. It is then removed and placed in a 275 F oven for 30 minutes.
- 6. The finished object has a coat 1/32 in. thick. For additional thicknesses, the process is repeated. That's how . . .

Poly Dons a Fluid Coat

The idea of fluid coating is actually dual-purpose. It can be used to coat an object by dipping (above) or it can be used to spray on a polyethylene coating (see cut).

The double-pronged technique will be put on display for the first time at the National Exposition of Chemical Industries in Philadelphia next week (Dec. 5-9). Lining metals or glass objects with polyethylene is an old idea, of course. In fact, it's a highly successful means of imparting polyethylene's corrosion resistance to other

materials. But American Agile, which worked up a flame coating process back in 1950, felt there was room for improvement in the methods being used. It discovered, for instance, that the acetylene flame from the spray gun frequently degraded the polyethylene before it reached the surface. And it was hard to use the spray gun effectively on confined areas like the inside of small-diameter pipes.

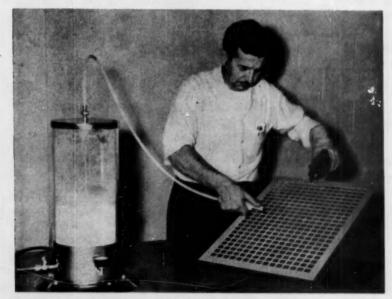
The attempt to coat at lower temperatures was a logical alternative. But that, too, posed problems, for polyethylene is not free-flowing, tends to bunch up on metal. American Agile found that it could blend the finely ground polyethylene resin with powdered metals in a special (and highly confidential) formula* to get a material that, when agitated, took on fluid characteristics.

It intends to patent the process calling for mechanical agitation and (with Polymer Corp.) will have a U.S. license on a German process that employs compressed air (at 15 psi.) as the agitating medium.

The technique, it feels, will prove valuable both in the lab and in the plant. Presently, it has a lab model (8 in. in diameter and 18 in. high) that's expected to sell for about \$100. A "pilot plant" model (18 in. diameter) will be available later for approximately \$100, and a "production line" one (30 in. diameter) for \$175.

What's the Use? The finished coating is fused to the metal, leaves a light coating even if chiseled off. American Agile sees it as being particularly attractive for coating intricately shaped objects. Its immediate potential may be in laboratory equipment on tools that require the strength of metals and corrosion resistance of polyethylene. American Agile engineers estimate, for instance, that the life of a pair of steel tongs might be increased tenfold by lining them with polyethylene.

But it sees large-scale markets in the offing, too. An aircraft company



FLUID SPRAYING: The secret's in the mix.

* Agile will sell the formula for \$1.42/lb. A 1/32 in. coating requires 0.1478 lbs./sq. ft. of surface.



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WRITE FOR INFORMATION

PRODUCTION .

is testing the coating technique on a guided missile. The missile contains fuming nitric acid, is now made of stainless. The company is attempting to replace the stainless with a mild carbon steel covered with 1/16 in. of polyethylene applied by the American Agile technique.

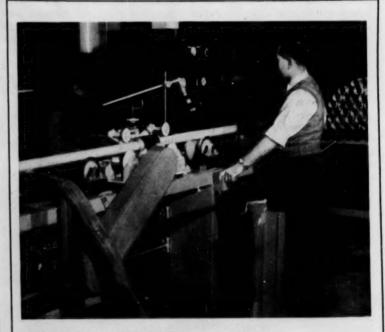
In addition to other markets presently within its grasp, it foresees even broader applications with the availability of linear polyethylenes, which will raise the temperature limits on polyethylene.

What's Ahead for Fuels?

By all odds, the fuels of todaywhether natural, nuclear, or chemical will still be the principal source of energy in 1975. But their relative roles may be drastically altered by shifts in supply and demand. At least that's the opinion of a panel of experts who discussed the future of fuels at last week's Winter Conference of the Manufacturing Chemists' Assn. in New

The outlook for hydrocarbon fuels as related to the chemical industry was presented by Joseph Pursglove, Jr., Pittsburgh Consolidation Coal Co.'s vice-president in charge of research and development. Highlighting his remarks with figures and trends for the past, present and future, Pursglove issued the oft-repeated warning that known reserves of all hydrocarbon fuels are not inexhaustible. He predicted that oil and gas reserves will be at a dangerous point by 1975, and that domestic production will depend on sharply supplemented imports by that time.

On the other hand, Pursglove stated, known coal reserves are great enough to supply all requirements for hundreds of years. Too, the compari-



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P8283 Chemical Week 330 W. 42 St. New York 36, N. Y. son of projected costs of these three basic fuels suggests that oil and gas may be prohibitive as related to coal twenty years hence. He also expressed the opinion that the use of atomic fuels for power generation and other uses will be relatively small for at least the next two decades.

While it may be difficult to forecast nuclear power's growth rate accurately. there's no question about the direction in which it's headed. J. C. Robinson, chief of the Engineering Development Branch of AEC's Reactor Development Division, told MCA listeners that reactor technology has already made considerable progress under the Five-Year Reactor Development Program and Power Demonstration Reactor Program. Industry's faith in the eventual production of competitive nuclear power is evident, said Robinson, from the large number of access permits recently issued as a result of

the Atomic Energy Act of 1954.

The recently announced investigation into the possibilities of nuclear fusion holds even greater promise of utilizing the atom's heat if the extremely difficult technical problems can be solved. But whether it's from fission or fusion, heat isn't the only form of atomic energy that's attractive to industry. Chemical processors in particular are striving to utilize the energy in radioactive particles, principally the gamma rays, for processing purposes in lieu of thermal energy (CW, Jan. 29, p. 48, et priori).

As a producer, the chemical industry has a large stake in the development of fuels used as propellents. And this field includes not only propellent research itself, but also the development of suitable materials of construction for rocket chambers, propellent handling equipment, and lightweight plastic air frames for missiles.



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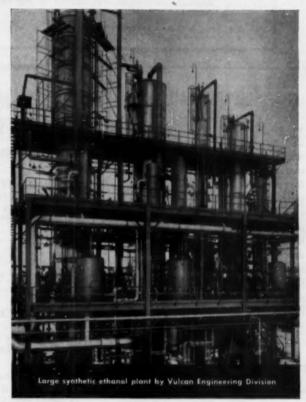
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Development of new propellents is be acceptable, the potential market more than justifies the gamble. For example, the Navy's D5-58 sky-rocket aircraft consumes about 1,800 lbs. of propellent for just one minute of powered flight. From the production, sales and use standpoint, fuels for primary propulsion are attractive prod-

> Said Paul Terlizzi, head of the Propellent Division, Naval Air Rocket

Test Station (Lake Denmark, N. J.): "Chemical concerns should commit a small amount of product development funds to the search for new chemicals for possible rocket propulsion use. Rocket propulsion is here to stay, and as such is a potential market for chemical and allied products."

Wherever they're headed, fuels will continue to be of vital interest to chemical consumer-producers.

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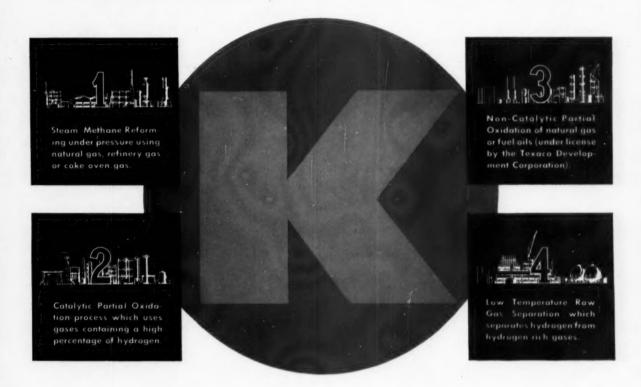
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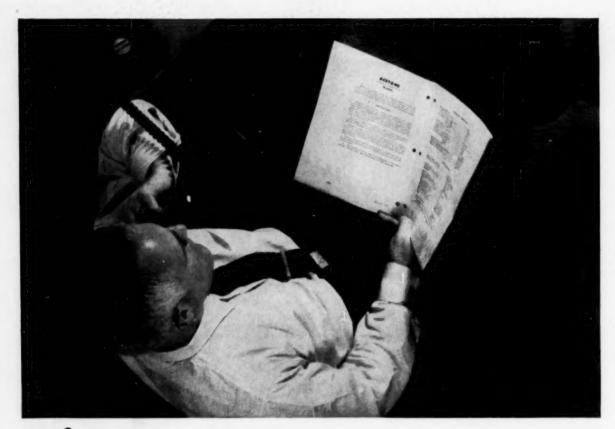
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